

November 2017

AVAILABILITY AND UTILIZATION OF ELECTRONIC INFORMATION DATABASES FOR RESEARCH BY AGRICULTURAL SCIENTISTS IN FEDERAL UNIVERSITY LIBRARIES IN NORTH CENTRAL NIGERIA

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Abubakar, Mohammed Suleiman and Akor, Philip Usman, "AVAILABILITY AND UTILIZATION OF ELECTRONIC INFORMATION DATABASES FOR RESEARCH BY AGRICULTURAL SCIENTISTS IN FEDERAL UNIVERSITY LIBRARIES IN NORTH CENTRAL NIGERIA" (2017). *Library Philosophy and Practice (e-journal)*. 1600.
<http://digitalcommons.unl.edu/libphilprac/1600>

**AVAILABILITY AND UTILIZATION OF ELECTRONIC INFORMATION
DATABASES FOR RESEARCH BY AGRICULTURAL SCIENTISTS IN FEDERAL
UNIVERSITY LIBRARIES IN NORTH CENTRAL NIGERIA**

BY

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ABSTRACT

The study was undertaken to determine the Availability and Utilization of Electronic Information Database for Research by Agricultural Scientists in federal universities in North Central, Nigeria. The instruments used were questionnaire and documentary records. Data were analysed using frequency distribution tables; percentage, mean and standard deviations. The population of this study was 415 scientifically distributed among the schools and faculties of Agriculture of the various universities covered by this study. Survey method was used for the study. Stratified sampling method was used to select 195 respondents to accommodate the different strata of the subjects involved in the study. The copies of the questionnaire that were returned were analyzed using the Statistical Package for the Social Sciences (SPSS). The study revealed that all the agricultural scientists in various universities subscribe to various online databases. The study also recorded that a high percentage of the respondents use electronic databases frequently and the utilisation of electronic databases was for research work, to update knowledge in their field of interest and current awareness. On availability of electronic databases the study found that 146 (74%) respondents agreed that electronic information was most usefulness for the improvement in the quantity and quality of publication of field research, as well as eliminating the problems of geographical location in the transfer of information. The study revealed a high level of satisfaction with the provision of electronic information services in the area. The study recommended that greater publicity should be given to the many and varied sources of research information available, so that more researchers would become aware and make use of the resources.

Keyword: Databases, utilization, electronic, agricultural, information, scientists, transportation

INTRODUCTION

Agriculture is the set of activities that transform the environment for the production of animals and plants for human use. Agriculture concerns techniques, including the application of agronomic research. Agriculture is the cultivation of animals, plants, fungi, and other life forms for food, fibers, biofuel, medicinal and other products used to sustain and enhance human life. Agriculture was the key development in the rise of sedentary human civilisation, whereby farming of domesticated species created food surpluses that nurtured the development of civilisation. But irrespective of the categories, they are seen as phases of decision making that farmers' are required to face during the cropping season. Nevertheless, studies on farmers' information needs have taken various patterns such as gender, farmer group (e.g. youth) and development area; like men and women farmers' information needs revolve around the resolution of problems such as income generation, best farming practices, methods of fertilizer application, agricultural inputs, market prices, transportation, food processing and preservation and new agricultural technologies (Okwu & Umoru, 2009; Zaid & Popoola, 2010; Saleh & Lasisi, 2011).

Agriculture formed the bedrock of the Nigerian economy and was the major activity and foreign exchange earner prior to the discovery of crude oil in Oloibiri. Nigeria was then self-sufficient in terms of food production. However, with the shift to the oil and gas industry, coupled with the alarming growth in population, Nigeria eventually had to start importing more food. This situation has become a source of concern to many stakeholders. Agriculture, which should be the bedrock for a broad based economic growth and development in an agrarian country like Nigeria, had been neglected and needed to be revitalized and returned to the centre-stage not only as a provider of food for the teeming population, but also as a major foreign exchange earner for the country. Undoubtedly, agricultural research and training provide a solid foundation for a sound development of agriculture in any nation and the success of this, to a large extent, depends on access to information. Information on agriculture spans across major subject fields such as Animal Production, Nutrition, Crop and Plant Science, Soil Science, Agricultural Engineering, Pharmacology and the Environment. There are many sources of information in this regard available in articles published in scientific literature, conference proceedings, textbooks, informal communications and others.

Kumar, Hemanth & Subramanyam, (2012) studied the use and awareness of the Internet at the University of Agricultural Sciences, Bangalore, India. This study demonstrated the different factors such as Internet usage, awareness about Internet usage, awareness about Internet services, favorite search engines, constraints faced by the users in surfing the internet, various purpose for using Internet, and satisfaction of adequate infrastructure facilities provided to use the Internet. The authors discovered that the usage of electronic information resources cuts across all members of the university community as there was an increase in library use in the university which was a result of the introduction of The Essential Electronic Agriculture Library (TEEAL) that has 130 journal titles on CD-ROM. Scientists all over the world use various databases, journals and other e-resources to search and use the latest information in their respective fields and related ones.

The results of agricultural research are published through various channels of communication in order that the information may be communicated and transmitted to the

agricultural scientists as speedily as possible. It is essential that the agricultural scientists be informed on time of the latest innovations and developments in their areas of specialization. Agricultural scientists investigate plants, animals and soils in order to research and eventually improve the quality of food, farming or the environment. Educational requirements generally include at least a bachelor's degree for the private sector and a graduate level degree for most jobs at universities and some research firms. In undergraduate and graduate programmes alike, aspiring agricultural scientists usually focus on an area of specialisation.

Devi, Maya & Prasad (2010), investigated the information seeking behaviour of agricultural scientists in electronic environment with reference to the Indian Institute of Vegetable Research, Varanasi. The survey result showed that there was great impact of electronic information sources on the searching habits of agricultural scientists. 60% of the agricultural scientists spent 1 to 2 hours of their time searching electronic sources and 60% used it daily for their work.

In view of the above, agricultural scientists are to carry out research in order to increase the commercial plants, animals and cultivation techniques to improve productivity and sustainability of farms and agricultural industries. Agricultural scientists collect and analyse data and samples of produce, feed and soil, and study other factors affecting production, advise farmers and farm managers about techniques for improving the production of crops and livestock, advise farmers about issues such as livestock and crop diseases, control of pests and weeds, soil improvement, animal husbandry and feeding programmes; study environmental factors affecting commercial crop production, pasture growth and animal breeding; study the effects of cultivation techniques, soils, insects and plant diseases on animal and crop production, as well as develop procedures and techniques for solving agricultural problems and improving the efficiency of production.

An agricultural scientist, therefore, seeks new knowledge to support and strengthen the existing systems, and to establish new ones by applying scientific and usually experimental methods. This ranges from simple trials to advanced research according to information need. It is changing the way agricultural science professionals obtain information. They use the Internet and electronic resources to do things such as accessing agricultural records. Faculties and students also depend more on the internet. Agricultural product information, continuing education resources, online supply catalogues and reference information have made the Internet increasingly popular in agriculture. The study is an attempt to examine the role of the University of Agricultural Libraries that is established to provide information to the students, staff and scientists researchers in the university communities. One of the objectives of these libraries in Nigeria is to develop and maintain collections of information resources in all formats such as print and non-print and to make these information resources available and accessible to users.

Salaam, Ajiboye & Bankole (2013) studied the use of library electronic information resources (EIR) by academic staff at the Federal University of Agriculture, Abeokuta, Ogun State, Nigeria. The study shows that most used e-resources in decreasing order were the CAB Abstract, TEEAL, AGORA, e-granary and HINARI. The scientists used EIR for various purposes; the major ones being for research.

Availability in this study is the extent to which electronic information database is available or provided for use by agricultural scientists in Universities in North Central, Nigeria. Availability, accessibility and use of information resources are indispensable to the teaching, research and community activities of academic staff members in any university system.

Information is an inevitable tool in the process of creativity; and that acquiring, processing and utilizing of relevant and timely information should be channeled through the development of perspectives (technical and human relations skills) among workers to produce novelty, new designs, new realities and new experiences. *Swain* (2010) in his study reveals that the majority of scientists are aware of EBSCO, and Emerald Management Xtra. Creativity is the ability to make connections from various pieces of information in a novel way and to bring these ideas to a fruitful result.

Database is an organised collection of information. The data is typically organized to model aspects of reality in a way that supports processes requiring information, such as the representation of agricultural scientists in universities to assist in research findings. Databases are mostly characterized by the kind of data they contain that is word, numbers or by their subject matter. Word-oriented databases contain, word or text as the principal data, whereas numbers-oriented databases often referred to as databanks – contain numbers, symbols, series, graphs and tables. The good news is that when you use an electronic database, you can be guaranteed that the information is reliable to a large extent. You can trust it. This is because all the articles and pictures and information that get into a database may have been reviewed by an editor. Plus, sometimes your teachers don't want you to use regular sites, it's better to use electronic databases that make it easy for you to cite articles.

An important result of Information Communication and Technology (ICT) has been the development of databases covering specific areas of knowledge. Their development has made easier access to relevant information on specific topic in agriculture. Scientific agricultural literature is pretty well accessible and users are well served by these modern information services. These sources of information are classified into CDROM and online. Some of the databases made available through these medium are; Centre for Agricultural and Bioscience International (CABI) Abstracts, Agricultural Information System (AGRIS), Agricultural Online Access (AGRICOLA), Biosciences Information Services (BIOSIS), TROPAG, VETCD, BEAST CD, The Essential Electronic Agricultural library (TEEAL), MEDLINE and Scientific Publishers' databases, etc.

In recognition of the importance of electronic information for research, libraries enter into subscription with international organizations that produce such resources or solicit for support from donor organizations like the Food and Agriculture Organization (FAO), Technical Centre for Agricultural and rural Cooperation (CTA) and funding agencies to acquire electronic information databases. Users of peer reviewed journals online are required to register with the producing organization and usage is password protected. Examples of online resources provided for the agricultural scientists that facilitate access through the use of passwords is Access to Global Online Research in Agriculture (AGORA), African Journals Online (AJOL) and Health Internetwork Access to Research Initiative (HINARI) where participating institutions are required to register. International Agencies like CTA, CABI, and FAO, etc donates CD-ROM, to libraries and information

centres. Individual users can also subscribe to publishers sites and obtain full-text or abstract to journal articles. Manohar, (2007) found out the internet accessibility of agriculture scientists in the College of Agriculture and analyzed the Impact of Internet, e-resources, print or electronic media on academic efficiency.

Utilisation in this study is the extent to which electronic information databases provided are used for research by agricultural scientists in the universities in North Central of Nigeria. Based on the above background, it is, therefore, pertinent for agricultural scientists to imbibe the culture of research and training in accessing and retrieving information for the development of agriculture in universities in North Central Nigeria. Nevertheless, it is noted that the uses of electronic databases in the agricultural universities in the region are inadequate which must be addressed by the management of the institutions.

Sinha & Sarkar (2010) examined the search pattern of online journals among the faculty members, research scholars and postgraduate students to collect the required data. The studies revealed that majority of users were aware of the availability of online Journals. It was discovered that users faced problems when using online journals.

This study summarised the conclusion from recent research studies and highlights some points about how people use electronic resources. It is on this observation, therefore, that the researcher is investigating the availability and utilisation of electronic information database for research by agricultural scientists in federal universities in North Central, Nigeria.

Statement of the Problem

University scientists today are usually equipped with electronic resources to satisfy their information needs. Various electronic information resources such as online databases on Agriculture are, therefore, available for effective utilisation by the agricultural scientists.

The preliminary observation by this study revealed that various factors were responsible for ineffective accessibility and use of electronic databases by agricultural scientists in Federal university libraries in North Central Nigeria. The question that agitates one's mind is what could be these factors militating against the availability and effective utilisation of electronic databases in the universities covered by this study. The answers to these questions constitute a gap in knowledge. In order to fill this gap, this study is conducted to determine the availability and utilisation of electronic information databases for research by agricultural scientists in federal universities library in North Central Nigeria. This has become necessary because no study seem to have been carried out in this area.

Aim and Objectives of the Study

The aim of the study was to determine the availability and utilisation of electronic information database by agricultural scientists in federal universities library in North Central Nigeria. The study was specifically designed to:

- 1 Identify the types of electronic information databases available in agriculture-based faculties of the university libraries in North Central Nigeria.

- 2 Find out how often agricultural scientists use electronic information databases in university Libraries of North Central Nigeria.
- 3 Ascertain the level of user satisfaction in the use of available electronic databases resources in the universities in North Central Nigeria.
- 4 Determine the inhibiting factors to effective provision of electronic information database by the faculties in the universities in North Central Nigeria.
- 5 Determine the inhibiting factors to effective utilisation of electronic information database by Agricultural Scientists in the universities in North Central, Nigeria.
- 6 Determine the strategies that could enhance the provision and utilisation of electronic information database by agricultural scientists in the universities in North Central Nigeria.

Research Questions

The following research questions guided the study.

- 1 What are the types of electronic information databases available in agriculture based faculties in the university libraries in North Central Nigeria?
- 2 How often do agricultural scientists use electronic information databases in university libraries in North Central Nigeria?
- 3 To what extent are agricultural scientists satisfied with use of available electronic Information databases resources in the university libraries in the North Central Nigeria?
- 4 What are the inhibiting factors to effective provision of electronic information databases by university faculties libraries in North Central Nigeria?
- 5 What are the inhibiting factors to the effective utilisation of electronic information databases by agricultural scientists in the university libraries in North Central, Nigeria?
- 6 What strategies could enhance the provision and utilisation of electronic information databases by agricultural scientists in the universities library in North Central Nigeria?

LITERATURE REVIEW

Conceptual Framework

Information is stimuli that have meaning in some context for its receiver. What entered into and stored in a computer, it is generally referred to as data. After processing (such as formatting and printing), output data can again be perceived as information.

When information is packaged or used for understanding or doing something, it is known as knowledge. The term Information refers to any communication or representation of knowledge such as facts, data or opinions in any medium, including textual, numerical,

graphic, cartographic, narrative or audiovisual forms. In the information society, the concept of information is highly appreciated and used in nearly every discipline. Devi, Maya & Prasad (2010) Investigated the information seeking behaviour of agricultural scientists in electronic environment with reference to Indian Institute of Vegetable Research, Varanasi. The survey result showed there was great improve of electronic information sources on the searching habits of agricultural scientists. 60% of the agricultural scientists spent 1 to 2 hours of their time searching electronic sources and 60% used it daily for their work. Popoola and Haliso (2009) argued that information resources are those information-bearing materials that are in both printed and electronic formats, such as textbooks, journals, indexes, abstracts, newspapers and magazines, reports, CD-ROM databases, the Internet/E-mail, video tapes/cassettes, diskettes magnetic disk, computers, micro forms and so on. These information materials are the raw materials that libraries acquire, catalogue, stock, and make available to their patrons.

The study reveals that retrieval of information is effective through a systematic organisation pattern of information sources based upon users information needs. Kumar & Davendra (2010), studied library faculty use of Internet services at the University of Agriculture and Technology, Meerut, Uttar Pradesh, India. The faculty gave information on Internet usage, favorite search engines, and sources of information about websites, problems faced by users, satisfaction and facilities infrastructure available in the agricultural libraries.

Information acquisition and use patterns in the traditional print environment have been researched into over the years; the electronic environment presents a new and relatively unexplored area for such study. The emergence of electronic information resources has tremendously transformed information handling and management in pure university academic environments. These dramatic changes include the way in which information is provided to the university communities. A number of electronic resources initiatives have been put in place to assist in the development of training and use of electronic resources in a number of academic institutions. For the current study, the primary as well as the secondary sources of literature has been consulted. However, journal articles and theses consulted revealed that information is what is derived from the data in the mind of the person receiving it and also depends on the relationship that the person generates in his mind between the sign (data) and the natural object or condition represented by that sign. This means that different people may derive different information from the same set of data. Consequently, the possession or awareness and use of appropriate information ensure organizational effectiveness. The major function of information is to increase knowledge of the user or to reduce his level of uncertainty.

Electronic information databases

An electronic database is an organized collection of information of a particular subject or multidisciplinary subjects. Electronic database can be searched and retrieve electronically. The data is typically organized to model aspects of reality in a way that supports processes requiring information, such as representation of agricultural scientists in universities to assist in research findings.

Databases are mostly characterized by the kind of data they contain that is word, numbers or by their subject matter. Word-oriented databases contain word or text as the principal data, whereas numbers-oriented databases often referred to as databanks – contain numbers, symbols, series, graphs and tables. Salaam, Ajiboye & Bankole. (2013) studied the use of library electronic information resources (EIR) by academic staff at Federal University of Agriculture, Abeokuta, Ogun State, Nigeria. The study shows that the most used e-resources in decreasing order were the CABI abstract, teal, agora, e-granary and hinari. The scientists used EIR for various purposes; the major ones being for research.

Development of databases

A large, regularly updated file of digitized information (bibliographic records, abstracts, full-text documents, directory entries, images, statistics, etc.) related to a specific subject or field, consisting of records of uniform format organized for ease and speed of search and retrieval and managed with the aid of database management system software. Content is created by the database producer (i.e. Thomson Reuters), which usually publishes a print version (Biological Abstracts) and leases the content to one or more database vendors (EBSCO, OVID, etc.) that provide electronic access to the data after it has been converted to machine-readable form (BIOSIS), usually online via the Internet or on CD ROM, using preferably proprietary search software. Monohar . (2007), investigation revealed that the use of the electronic resources by agricultural scientists in the college of agriculture. The study found out the Internet were not accessibly to agricultural scientists in the college of agriculture and analyzed the impact of Internet, e-resources, print or electronic media on academic efficiency. An electronic database in which the content was revised and augmented, usually on a regular basis, to provide current information or to add recently published sources and also designs to provide information about a very specific topic, as opposed to a range of topics, usually for limited users. Most journal databases are updated on a regular basis as new issues are published and indexed. Most databases used in universities are catalogues, periodical indexes, abstracting services, and full-text reference resources leased annually or so under licensing agreements that limit access to registered borrowers and university staff. There are many, many different types of electronic databases in the world today, including statistical databases, image databases, and others. These databases are becoming very significant these days as they are more up-to-date, and can be accessed anywhere, regardless of geographical boundaries. Such electronic databases are very valuable and useful for time-saving while conducting research and development, teaching and extension activities.

Compact Disc-Read Only Memory (CD-ROM) Databases

One application for the compact disc (CD) that is important to information dissemination is the CD-ROM (Compact Disc Read-Only Memory), used for the storage of computer text programs. Typically, a CD-ROM can store up to 250,000 A4 typewritten pages in digital form (550-600 megabytes) on a disc of a size of only 4.7 inches (11.98cm). This storage capacity corresponds to the whole of the Encyclopedia Britannica. The record is a sort of sandwich of Plexiglas and aluminum. It is almost impossible to damage it by scratches or blow, fingerprints, extreme climate condition or dust a particular problem of African.

The data are permanently retained when the disc is produced. Magnetic field or electromagnetic waves do not influence the record. The user cannot alter the information once it has been burnt in. No information is lost if there is power cut. It is possible to record on CD-ROM text, figures, graphs and digital pictures. The CD-ROM technology has dominated a lot of discussion in library and information service. This is due to its enormous advantages.

Parmar, Seema (2012) studied use of e-journals and CD-ROM databases by fraternity of CCSHAU, Hisar, India. Findings of study indicated that faculty members are access e-journals through CeRA. Agber, Tsokura and Agwu, (2013) studied assessment of online resources usage by Agricultural Science lecturers of tertiary institutions in Benue State, Nigeria. The study revealed the many types of electronic resources frequently used by respondents included electronic journals, electronic books, abstracts, search engines, video/pictures and encyclopedia.

On-line databases

An electronic database is organised collection of information of a particular subject or multidisciplinary subject. Electronic databases can be accessed through the Internet. Online databases are a collection of electronic information sources (e-journals/e-books) by publishers from various fields and disciplines. CD-ROM databases: CD-ROM databases allow users access relevant databases without robust Internet connectivity in libraries. Swain (2010), in his study reveals that the majority of students are aware of EBSCO, and Emerald Management Xtra. Calvert (2000) has evaluated the impact of electronic journals and aggregate databases on interlibrary loan activities. His findings reveal that results are not significant enough to justify searching, borrowing requests in aggregate databases and changing current inter-library loan procedure for searching request before ordering. Mercado It is therefore cost effective than online databases as information could be accessed off-line without paying telecommunications fee. Besides, CD-ROM databases are of immense value over print if the system is networked, as patrons at their terminals could access information without coming to the library (Afolabi, 2007).

Characteristics of electronic database

An electronic database is a collection of data arranged in a systematic way to make for easy and fast search. In other words, it is a computer-based collection or listing of information, usually organized with searchable elements or fields. The most common type of library database consists of records describing articles in journals or newspapers. Retrieval from this information store is basically accomplished through a matching process. The process of matching customer's query against information in databases is the essence of computerized information retrieval. Some of the characteristics of on-line and CD-ROM medium for information access that made them valuable sources of information and Electronic resources with their characteristics of flexibility, portability, searching facility, storage and access/dissemination.

Effects of use of electronic information databases.

Databases are used to support internal operations of organisations and to underpin online interactions with agricultural scientists and researcher. Databases are used to hold

administrative information and more specialized data, such as engineering data or economic models. Examples of database applications include computerized library systems, flight reservation systems and computerized parts inventory systems. Agber, Tsokura & Agwu (2013), argued that assessment of online resources usage by Agricultural Science lecturers in tertiary institutions in Benue State, Nigeria. The study revealed that there are many types of electronic resources frequently used by respondents included electronic journals, electronic books, abstracts, search engines, video/pictures and encyclopedia. The study shows that socio-economic and institutional factors significantly influenced the use of electronic resources.

Echezona & Ugwuanyi (2010), argued that the poor nature of Internet speed infringe on the usefulness of the connections and is a real barrier to using e-resources. Their work further reveals the survey of ATICS in 2006, which compared the bandwidth kbps (kilobits per second) in African academic institutions shows that the University of Jos and Bayero University Kano are the only academic institutions in Nigeria listed among the first ten countries in Africa. The former has a total of 6,000 kbps uplink and downlink, while the later has only a capacity of 4,500 kbps. The situation, the author reiterated is further compounded by a low level of literacy in computer manipulation. The current trend however, shows the heavy reliance of sciences, technology and medical research on electronic form of information such as from compact disc and On-line databases. Scientific, technological and medical information has two features, which make their full use difficult: their enormous quantity, which constantly grows, and the great variety of forms in which they are presented. Information on the above field of study can reach a user in a book, report or symposium and as a periodical article or photograph. A range of information covering all aspect of scientific, technological and medical research is available. Donor agencies are also supporting organizations and libraries with computers for both internet connectivity and CD-ROM searches. Scientific research in Nigeria, like many other developing countries is improving due to access to quality research techniques.

The Internet facilitates online access as it is the interconnection of computers from different geographical locations. Databases are created by different organisations on different subject fields, each of which is installed on a computer. Once such a system is connected to the network, a user from any part of the world can have access to such information applying the necessary procedures. The Internets growing popularity in most developing countries of the world has introduced a new form of information dissemination and use. Government and corporate bodies have developed interest in this new technology by establishing cyber cafes' in and outside their organizations to enable users have access to needed information. Kumar, Davendra (2010) investigated the library faculty use of internet services at the University of Agriculture and Technology, Meerut, Uttar Pradesh, India. The faculty gave information on internet usage, favorite search engines, and sources of information about websites, problems faced by users, satisfaction and facilities infrastructure available in the libraries.

Agricultural information databases in Nigerian universities

Information sources especially On-line and the CD-ROMs have become a source of public wealth. They are tangible objects for information transfer both in the sciences, technology

and the humanities. The following information materials are the raw materials that libraries acquire, catalogue, stock, and make available to their patrons are: -

Agricultural Information Services (AGRIS) is a database created by the Food and Agricultural Organization (FAO) in 1974, with bibliographical references indexed by the organization and also by cooperating centres in various countries. AGRIS was developed to meet the information needs of developing countries in the fields of agricultural research, food production, agricultural economics, rural development, natural resources and the environment. It receives input from an international network of agricultural information centres. It also supports the setting up and operation of agricultural information systems in developing countries. Its objective is to overcome duplication of effort by specialized information services and to improve their efficacy. Agricultural research is the application of scientific theories and techniques to agriculture in order to develop new technologies that can increase production protect natural resources and the environment. This result is an increase in food production and income generation.

Agricultural Online Access (AGRICOLA), this originated in 1970 under the name CAIN. It corresponds to the bibliography of agriculture of the National Agricultural Library, USA. AGRICOLA provides a comprehensive worldwide coverage on agriculture and veterinary literature, listing journals article and monographs, Agricultural Experiment stations, Extension services, USDA publications. It is produced by USDA Technical Information System.

Centre for Agricultural and Bioscience International (CABI Abstracts) is the most comprehensive bibliographic database covering agriculture, forestry, human nutrition, veterinary medicine, and the environment. Centre for Agricultural and Bioscience International produces it. Over 6,000 academic journals are scanned and abstracted annually to go into the database.

Veterinary Science Database (Vet CD) covers all aspects of veterinary medicine such as arthropod, helminthes, protozoa and fungal diseases of domestic and wild animals. Attention is given to zoo animals, wild animals, pets and farm animal.

The Essential Electronic Agricultural Library (TEEAL) TEEAL or “Library-in-a-Box” database is a recent arrival on the scene. It is a full-text database covering 140 selected journals in agriculture and related sciences, with content beginning from 1993. The update is yearly and currently span the period 1999 – 2010 and contains over 2 million page images stored on 426 Compact disks. It is an initiative of Albert Mann Library, Cornell University in association with Rockefeller Foundation.

The databases mentioned above are available both on CD-ROM and on-line. Most International organizations like CTA, Rockefeller Foundation; Food Agricultural Organization (FAO) and some donor agencies sponsored their acquisition by information centers and organizations from developing countries including Nigeria. To facilitate on-line access of these databases and other sources of information in agriculture, the following gateways were created:

Access to Global On-line Research in Agriculture (AGORA) is an Internet portal with links to major scientific journals, bibliographic databases and other Internet resources

related to agriculture. It is developed by Food and Agricultural Organisation (FAO) in collaboration with World Health Organisation (WHO), major scientific publishers and Manual Library of Cornell University USA. It also includes information on related sciences and social sciences such as environmental sciences, Food policy and agricultural economics. This is one initiative that has given agricultural researchers, lecturers, and students from this part of the world opportunity to have access to a wide range of sources of On-line resources at a low cost. Some of the founding publishers contributing to AGORA journals are: Blackwell Publishing, CABI Publishing, Elsevier, Kluwer Academic Publishers, Lippincott, Williams and Wilkins, Nature Publishing Group, Oxford University Press, Springer – Verlag, John Wiley and Sons, etc. The following databases can be accessed through the AGORA Portal.

African Journals Online (AJOL) is a database of journals published in African, covering the full range of academic disciplines. The objective of AJOL is to give greater visibility to the participating journal and to the research community. It was initiated in May 1998 as a pilot project managed by the International Network for the Availability of Scientific Publications (INASP) It aimed to promote the awareness and use of African Journals in the sciences by providing access to table of contents (TOC) on the Internet.

Biomed Central is an independent publishing house committed to providing immediate open access to peer –reviewed biomedical research. Original research articles published by Biomed central are made freely and permanently accessible online immediately upon being published. The database views open access to research as essential in order to ensure the rapid and efficient communication of research findings.

Directory of Open Access Journals (DOAJ) is aimed at increasing the visibility and ease of use of open access scientific and scholarly journals thereby promoting their increasing usage and impact. DOAJ defines Open access as the right of the user to read, download, copy, distributes, print, search or link to the full text pdf articles.

Program for the Enhancement of Research Information (INASP PERI) PERI provides researchers with access, via country-wide access license, to full text journals and bibliographic and reference database, including provides those from Blackwell, CABI, EBSCO. Emerald, Gale, Oxford University Press, OVID (Silver Platter), Springer and the Royal Society,

The Health Internet-work Access to Research Initiative (HINARI) is another on-line initiative that provides free or very low cost on-line access to the major journals in biomedical and related social sciences to local, not – for – profit institutions in developing countries. It was launched in 2002, with some 1, 500 journals from six major publishers including: Blackwell, Elsevier Science, the Harcourt Worldwide STM Group, Wolters Kluwer International Health and Science, Springer Verlag and John Wiley. Twenty-two additional publishers joined in May 2,002, bringing the total number of journals to over 2000. The number of participating publishers and of journals and other full-text resources has grown continuously..

Information utilisation

Dhingra, Navjyoti (2013) assessed the attitudes towards electronic journals available through CeRA and examine the current level of use of these electronic publications by faculty members of the Punjab Agriculture University, Ludhiana. This study established that usage of e-journals has increased as compared to the printed journals as majority of users have started accepting the e-journals. Faculty is accessing these e-journals at their concerned departments more as compared to the library. There are many advantages of e-resources in enhancing and supporting research and education such as enabling users to save time and space, and providing instant easy improved access to useful information at minimum cost (Vakkari 2008). Information is an inevitable tool in the process of creativity; and that acquiring, processing and utilizing of relevant and timely information should be channeled through the development of perspectives (technical and human relations skills) among workers to produce novelty, new designs, new realities and new experiences. Creativity is the ability to make connections from various pieces of information in a novel way and to bring these ideas to a fruitful result. However, for information to be used effectively, it has to be systematically collected, organized and must be readily available for users on demand.

Utilisation of agricultural information

Information of agricultural relevance may be derived from an innovation, a new technique or technology from agricultural practices and research. Research replicates experiment, may be by changing some aspects of the original experiment within a given parameter. The agricultural researcher is involved in research and training. Information utilisation assists managers in organisations to build their own boundaries of thinking and to have more unique perceptions and cognitions in order to enhance their level of creativeness. Oladele (2006) conducted a study on Information seeking and utilization among agricultural researchers in Nigeria. The study demonstrates the level of awareness and the use of agricultural information sources including e-databases among researchers in Nigeria. Creativity is the ability to make connections from various pieces of information in a novel way and to bring these ideas to a fruitful result. Scientific research deals more an experiment with the hope for a new idea while studying, introduces new concepts derived from research. The utilisation of information resources has a great influence.

Kumar, Hemantha and Subramanyam (2012), studied use and awareness of Internet at University of Agricultural Sciences, Bangalore. This study demonstrated the different factors such as Internet usage, awareness about internet usage, awareness about Internet services, favorite search engines, constraints faced by the users in surfing the Internet, various purpose for using Internet, and satisfaction with infrastructure/ facilities provided to use the Internet. The study indicates a high utilization of the database and also a high level of satisfaction by users. Consequently, a user of the information remarked thus; “sometimes we replicate experiment we read by changing some aspect of the original experiment. The database is very useful in preparing our literature reviews. The use of electronic information is on the increase resource, habit of students appears to be moving away from predominant reliance on printed material” He further stressed the predominant use of resources from the electronic category over other categories of resources and added that it’s reasonable to expect the pattern to continue. Access to electronic information databases had a great influence on the quality of students’ engagement such as term paper, projects,

thesis, dissertation etc. In a related study, Dhingra, Navjyoti (2013) assessed the attitudes towards e-journals available through CeRA and examines the current level of use of these electronic publications by faculty members of the Punjab Agriculture University, Ludhiana. This study explores that usage of e-journals has increased as compared to the printed journals as majority of users have started accepting the e-journals. Faculty is accessing these e-journals at their concerned departments more as compared to the library.

Impact of electronic information databases on agricultural scientists

Sinha and Sarkar, (2010) confirmed the search pattern of online journals among the faculty members, research scholars and postgraduate students to collect the required data. The study revealed that the majority of users were aware of the availability of online journals. It was found that users faced problem when using online journals. This study summarizes conclusion from recent research studies and highlights some conclusion about how people use electronic resources. Devi, Maya & Prasad (2010), carried out the information seeking behaviour of agricultural scientists in electronic environment with reference to Indian Institute of Vegetable Research, Varanasi. The survey result showed there was great impact of electronic information sources on the searching habits of agricultural scientists. 60% of the agricultural scientists spent 1 to 2 hours of their time searching electronic sources and 60% used it daily for their work.

The advantages of on-line and CD-ROM access are considerable and it is important that they are highlighted inside this work. Houghton and Convey (1977) identify Impact of Electronic Information Databases on Agricultural Research thus;

- i. The search results are presented in a concise and standardized format whose detail can be pre-determined by the searcher. The command sets of the various systems allow the searcher to specify the necessary form of output: he may indicate that he requires seeing titles only, bibliographic details, or with abstracts or full text where applicable. The output of a database search is tailor – made based on the search term used by the searcher.
- ii. The problem of geographical location as barriers to the transfer of information is eliminated through electronic access. The room in which the computer is located becomes an information centre in itself (be it a library building or not) giving access to the millions of citations in the databases to which it is connected through communication networks.
- iii. Electronic database access makes it possible for the library to serve more users (if located within a library building). The amount of time spent searching the literature is drastically reduced and as indicated previously the drudgery is taken out of searching. The staff time saved can be used to process more searches.
- iv. Searching electronic databases usually gives the searcher access to the most current citation easier than when searching manually. Most databases allow a user to search according to the year the citation is added.

Review of Empirical Studies.

Agarwal and Dave. (2009) studied the use of Internet by the scientists and research fellows in Central Arid Zone Research Institute, Jodhpur (Rajasthan). The study revealed that the respondents accessed Google search frequently (100%) followed by Yahoo 85.29%. It is also observed that equally 97.06% respondents use the internet for education & research purposes.

Devi, Maya and Prasad. (2010) carried out the information seeking behaviour of agricultural scientists in electronic environment with reference to Indian Institute of Vegetable Research, Varanasi. The survey result showed that there was great impact of electronic information sources on the searching habits of agricultural scientists. 60% of the agricultural scientists spent 1 to 2 hours of their time searching electronic sources and 60% used it daily for their work.

Devi, Maya & Prasad, (2010) compared the use of electronic resources in the Central Institute for Sub-Tropical Horticulture (CISH) & Indian Institute of Sugarcane Research (IISR), Lucknow. The result revealed that scientists working in CISH are more dependent on electronic resources for their work in comparison with scientists of IISR. The number of agricultural scientists who visited the library daily was found to be more in the IISR institution.

Dhingra, Navjyoti (2013), assessed the attitudes towards e-journals available through CeRA and examines the current level of use of these electronic publications by faculty members of the Punjab Agriculture University, Ludhiana. This study explores that usage of e-journals has increased as compared to the printed journals as majority of users have started accepting the e-journals. Faculty is accessing these e-journals at their concerned departments more as compared to the library.

Echezona and Ugwuanyi (2010), studied the poor nature of Internet speed/infringe on the usefulness of the connections and is a real barrier to using e-resources. In the same vein, the author reiterated his further compounded by a low level of literacy in computer manipulation. The current trend however, shows the heavy reliance of sciences, technology and agriculture research on electronic form of information such as from compact disc and On-line databases. Scientific, technological and agriculture information has two features, which make their full use difficult.

Kumar & Kumar (2008), confirmed the perception and use of e-resources and the internet by the engineering, medical and management academics in Bangalore City, India. The study results show that the students and faculty, who participated in this survey, are aware of e-sources and the Internet. Even though majority of the academic community uses information sources for their academic-related work, most of them prefer print to electronic information sources. The study further revealed that many of the students and faculty learn about the electronic information sources either by trial and error or through the advice of friends.

Kumar, Davendra (2010) investigated library faculty use of internet services at the University of Agriculture and Technology, Meerut, Uttar Pradesh, India. Faculty gave information on Internet usage, favorite search engines, and sources of information about

websites, problems faced by users, satisfaction and facilities infrastructure available in the libraries.

Kumar, Hemantha & Subramanyam. (2012) studied the use and awareness of internet at University of Agricultural Sciences, Bangalore. This study demonstrated the different factors such as of Internet usage, awareness about internet usage, awareness about internet services, favorite search engines, constraints faced by the users in surfing the Internet, various purpose for using Internet, and satisfaction of adequate infrastructure facilities provided to use the Internet.

Madhusudhan (2007) conducted a study on the Internet use by research scholars in University of Delhi and the results indicated that researchers, like others elsewhere, are beset with the problems of inadequate computers with Internet facilities, slow Internet connection, and lack of skills and training. The survey also reveals that 57 per cent of the respondents were facing retrieval problems. It also reported that some scholars lacked research techniques and training.

Maraddi, Krishna, et al, (2012) carried out a survey on the use of CeRA by the postgraduate students at the University of Agricultural Sciences, Raichur. The study reveals that most of the Postgraduate students were aware about the CeRA and use the CeRA. Nayak, Manoj Kumar (2012), examined the use and impact of e-resources at Central Rice Research Institute (CRRI). The study indicated that CRRI scientists and research scholars are using more e-journals. The result indicated that scientist and research scholars are using e-resources frequently.

Mittal, Arvind & Sharma (2013) studied attempt to analyses the user's familiarity and used the digital resources in Agricultural Universities of Himachal Pradesh. This study reveals that 96% of users know about the digital resources. 31% users use the libraries' digital resources 48% users have the problems of searching skills and 24% users don't know how to use it.

Parmar, Seema (2012) studied use of e-journals and CD-ROM databases by fraternity of CCSHAU, Hisar, India. Findings of the study indicated that faculty members access e-journals through CeRA. Agber, Tsokura & Agwu, (2013) studied the access of online resources usage by Agricultural Science lecturers of tertiary institutions in Benue State, Nigeria. The study revealed that, many types of electronic resources frequently used by respondents included electronic journals, electronic books, abstracts, search engines, video/pictures and encyclopedia. The study shows that socio-economic and institutional factors significantly influenced the use of electronic resource.

However, Plum etal (2010) & Shuling (2007) argued that the problems and challenges faced by users in the utility and access of the e-resources include lack of awareness and information literacy skills. In the same vein, Angello (2010) stated that the problems hinder the users to search databases include lack of time, the challenge of locating “good citable stuff”, inability to use effectively the library, and poor skills in information searching

Sabouri, Mohammad, Sadegh et al, (2010), confirmed the use of electronic resources by users in the Faculty of Agriculture, Islamic Azad University India. Their finding indicated that 84.1% of all users came to use information centre and the digital library services. In

sum 62.5% of the subjects knew about Rose-Net in university for sciences and research and 51.8% of them used Rose-Net.

Salaam, Ajiboye & Bankole, (2013), studied the use of library electronic information resources (EIR) by academic staff at Federal University of Agriculture, Abeokuta, Ogun State, Nigeria. The study shows that most used e-resources in decreasing order were the CAB Abstract, TEEAL, AGORA, e-granary and HINARI. The scientists used EIR for various purposes; the major ones being for research.

Tripathi, Harish & Raj, (2011) studied the usage of electronic resources in ICAR library. The study discussed use of e-resources, frequency of their visit in library and tools used for searching the information. Francis, (2012) carried out evaluation of use of Consortium of e-Resources in Agriculture in context of Kerala Agricultural University India. Results showed that most of the students were familiar with the use of digital information resources available online and 87.14 % of them used CeRA.

Vakkari, (2008) study explored how the use of electronic information resources has influenced scholars' opinion and its effect on publication productivity. Similarly, the Finnish Electronic Library usage at the university of Finland shows that the use of electronic literature has improved academics research productivity work considerably.

However, Omolewa (2008) reports that many of the professors in Africa are only local academics who are barely known outside their institutions and are not recognized for the quality of their knowledge or scholarship. To be acknowledged as an international scholar, an academic must publish internationally and locally. For this to be possible, the academic must have access to wide range of information resources, must be current and know what is going on in his/her field.

Ani & Ahiauzu (2008) developed a framework for effective development of electronic information resources (EIRs) which explores the levels of developing electronic information resources in university libraries and encourages local research information conversion for national and international access by users. There are many advantages of e-resources in enhancing and supporting research and education such as enabling users to save time and space, and providing instant easy improved access Vakkari (2008) support the useful information at minimum cost.

RESEARCH METHODOLOGY

Research Design

The descriptive research survey research design was adopted for this study, to determine availability and utilisation of electronic database for research by agricultural scientists in federal universities of North Central Nigeria. Nworgu (2006) argued that descriptive survey research gives a group of people or items by collecting and analyzing data from only a few people or items considered to be representative of the group.

Population of the Study

The population of the study was the Agricultural Scientists in Agriculture Schools/Faculties in the seven federal universities in North Central Nigeria and postgraduate (PG) students from these schools/faculties. The population of this study was 415 distributed among the schools and faculties of Agriculture of the various universities covered by this study as shown in Table 3.1

Table 3.1 Population of the Study

S/NO	Universities	Agricultural Scientists	Postgraduate Students	Total
1	School of Agriculture Federal University of Technology Minna.	21	112	133
2	Faculty of Agriculture University of Abuja.	20	66	86
3	Faculty of Agriculture University of Agriculture Makurdi.	23	39	62
4	Faculty of Agriculture University of Ilorin	16	56	72
5	Faculty of Agriculture University of Jos.	18	44	62
6	Faculty of Agriculture Federal University Lokoja	--	--	--
7	Faculty of Agriculture Federal University Lafia,	--	--	--
	Grand Total	98	317	415

Source: Registry Department of each University.

Sample and Sampling Techniques

The sample of the study was 240. Out of 415 Agricultural Scientists 240 (59%) was selected using stratified random sampling. Table 3.2 shows the sample size for each University under investigation.

Table: 3.2.

S/NO	Universities	Agricultural Scientists	(PG) Students	Total
1	School of Agriculture Federal University of Technology Minna.	14	60	74
2	Faculty of Agriculture University of Abuja.	11	40	51
3	Faculty of Agriculture University of Agriculture Makurdi.	15	20	35
4	Faculty of Agriculture University of Ilorin	10	36	46
5	Faculty of Agriculture University of Jos.	10	24	36
6	Faculty of Agriculture Federal University Lokoja	--	--	--
7	Faculty of Agriculture Federal University Lafia,	--	--	--
	Grand Total	60	180	240

Source: Registry Department of each University.

From the table, 3.2 60 out of 98 Agricultural Researchers were selected, while 180 out of 317 Postgraduate students were selected using stratified random sampling. The Faculties/Schools of Agriculture in the five universities were arranged into strata and samples were randomly taken from each of the universities.

Instruments for Data Collection

The researcher used questionnaire and documentary sources for data collection. A structured questionnaire titled; Availability and Utilisation of Electronic Information Databases. Questionnaire (AUEIDQ) was designed and administered to the respondents for the purpose of data collection. The questionnaire was divided into Sections A-G. Section A required personal background information of the respondents. Sections B-G contained items on the six (6) research questions, that allows a respondent to indicate by ticking how strongly he or she agrees or disagrees with an opinion on a graded scale was used. The choice of this instrument was based on the following reasons; first, that the respondents were literate and capable of completing the questionnaire without further assistance from the researcher. Secondly, the questionnaire method enjoys prominence in educational research. Sambo (2008), observes that, questionnaire are used to measure the attitude of respondents by asking them what they think about some issues. In addition to the questionnaire, the documentary evidence was used to gather data required for the study.

Validation of the Instruments

In order to ensure that the questionnaire was capable of eliciting the required information from the respondents, the instrument was subjected to face and content validation. This means that the draft instrument was made available to three experts in school of agriculture Federal University of Technology, Minna, to peruse and raise necessary observations, corrections and amendment to strengthen the instrument. A measuring instrument is considered valid if it measures timely and accurately the desired quality (Mohammed, 2005).

Reliability of the Instrument

The instrument was subjected to face and content reliability test to ensure its consistency for data collection. A pilot study was conducted. The instrument was tried twice on five scientists in the Faculty of Agriculture at the University of Abuja. The reliability of cronbach Alpha test was carried out on the instrument and a average reliability level of 0.752 was obtained, this guaranteed the reliability of the instrument.

Method for Data Analysis

Data collected were organized according to research questions. The study used descriptive statistics for presentation and analysis of data. The data collected were analyzed using descriptive statistics in the form of simple percentages, frequency distributions and the table for the research questions.

RESULTS AND DISCUSSION

Response Rate

Out of the 240 copies of the questionnaires that were administered, 195 (81%) were duly completed, returned and were found usable. The break down shows that, 55 (23%) were Agricultural Scientists from the Faculties of Agriculture and Veterinary Medicine and 140 (58%) were postgraduate students from the universities selected for the study. This high response rate could be due to the fact that the researcher personally administered the instrument and went back several times to collect the completed copies of the instrument.

Status of the respondents

The status of the respondents that participated in the study is presented in Table 4.1

Table 4.1 Distribution of the Respondents by Status

STATUS	NO OF RESPONDENTS	PERCENTAGES
Post Graduate Student	65	33
Assistant. Lecturer	15	8
Lecturer II /Research Fellow II	25	13
Lecture I/Research Fellow I	28	14
Senior Lecturer / Senior Research fellow	35	18
Principal Research Fellow	6	3
Reader	8	4
Professor	13	7
Total	195	100%

Table 4.1 gives a good picture of the respondents in the study. From the table, it was discovered that majority, i.e 65 (33%) of the respondents were Postgraduate Students. All the respondents were actively involved in teaching and research activities except the postgraduates students.

One of the objectives of this study is to find out the type of electronic information databases and Internet portals available in the agricultural bases faculties, therefore the respondents were given a list of databases from which they were required to indicate those that were available in their universities. The data collected and analyzed is presented on Table 4.2

Table 4.2: Types of Electronic Databases Available in the Agricultural Universities

S/NO	ON-LINE DATABASES	Available	%	Not Available	%	Total %
1	AGORA	135	69	60	31	100
2	CAB ABSTACRTS	128	66	67	34	100
3	MEDLINE	×	X	×	X	X

4	AGRIS	130	67	84	33	100
5	AGRICOLA	125	64	65	36	100
6	HINARI	×	X	×	X	X
7	PUBMED	120	61	70	43	100
8	SCIELO	×	X	×	X	X
9	INSPERI	×	X	×	X	X
10	AFRICAL JOURNALS	118	60	50	26	100
11	DIRECTORY OF OPEN ACCESS JOURNALS	110	56	30	15	100
12	VET CD	98	52	97	48	100
13	BEAST CD	78	40	117	60	100
14	AGMIS	128	66	67	34	100

Key = = AVAILABLE, × = NOT AVAILABLE

Table 4.2 shows that some agricultural scientists subscribing to some internationally prominent e-databases for searching the latest research literature on agriculture and these e-databases had become an important part of agriculture university libraries.

This regarding the usage of e-databases presented that AGORA was the most frequently used e-database by 135 (69%) of the postgraduate students, followed by Agris 130 (67%), Cab Abstract 128 (66%) and Agricola 125 (64%), respectively. Whereas, AGRICOLA, CAB ABSTRACT, AGRIS, AND AGORA were the frequently used e-databases by 120 (61%), 118 (60%), 110 (56%), 98 (52%), 78 (40%) and 128 (66%) of the postgraduate students respectively.

Similarly, AGORA was the most frequently used e-database by the highest 69% of the research Scholars, followed by CAB ABSTRACT 128 (66%), AGRICOLA 125 (64%), AGRIS 128 (66%) AND AFRICAL JOURNAL 118 (60%) respectively. This was also evident from the table that CAB Abstract, Biotechnology and AGRICOLA were the frequently used e-databases by 135 (67%), 128 (66%) and 125 (64%) of the research scholars respectively.

From Table 4.2, it is interesting to find out that all the agricultural scientists subscribe to various online databases and all have one or more databases on CD-ROM. Databases such as MEDLINE, AGRICOLA, PubMed, Biomed Central, African Journals Online, AGORA and HINARI portals and CD-ROMs such as CAB Abstracts, BEAST CD, VET CD,

TEEAL, AGRICOLA etc. are commonly available in almost all the libraries within the university.

Frequency of Utilisation of Electronic Information Databases

Frequency of use of electronic information in the agricultural universities

Information, no matter how well packaged, does not realize its value until it is well known and put to use. Out of those who responded in affirmative on availability of databases, were asked how frequently they use these resources. The question is framed in time scale such as daily, weekly, monthly, annually and not at all. The result inSs Table 4.3 and fig 1

Table 4.3 Frequency of use of Electronic Information in the Agricultural Universities

Frequency	No of respondent	Percentage
Daily	30	15
Weekly	48	25
Monthly	68	35
Annually	30	15
Not at all	19	10
Total	195	100

Fig. 1: Frequency of Use of Electronic Information in the Agriculture Universities From the analysis of data presented in the Figure 1 and Table 4.3, it could be seen that 68(35%) of the respondents used the electronic databases monthly, 48(25%) used the electronic database weekly while 30 (15%) used the electronic databases daily and annual.

Level of satisfaction with electronic information services

Satisfaction with any kind of service provision by any service provider is a fundamental factor in determining its continuous patronage. This also applies to electronic information service provision. Satisfaction in this study refers to the feeling of pleasure that the users derived from the use of information resources. The researcher therefore, presented a list of options to the respondents to determine their level of satisfaction with electronic information service provision in the Universities. The responses is captured and presented in table 4.4 and figure 2.

Table 4.4 Responses to the Level of Satisfaction with electronic information databases

Level of Satisfaction with Electronic Databases	No of Respondent	Percentage
Highly Satisfied	120	61
Satisfied	35	18
Not Satisfied	15	8

Highly Not Satisfied	25	13
Total	195	100

Fig. 2: Level of Satisfaction with electronic database. The above finding is presented in table 4. 4 and fig. 2 show that 120 (61%) are satisfied with electronic resources. This shows quite a good level of satisfaction in the services offered. And about 15 (8%) were not satisfied with the electronic information databases.

Inhibiting factors affecting the provision of electronic databases by the agricultures scientists in the university libraries of North Central of Nigeria.

One of the objectives of this research is to identify inhibiting factors affecting the provision and use of agricultural databases by agricultural scientists and students in the agricultural universities. The results are presented in table 4.5.

Table 4.5 Responses to the Inhibiting Factors Affecting the Provision of Electronic Databases by the Scientists in the University Libraries of North Central of Nigeria.

S/No	Factor affecting the provision of Electronic information Resources	Strongly Agreed	%	Agreed	%	Disagreed	%	Strongly Disagreed	%
1	Slow internet service	100	51	34	17	37	19	24	12
2	High cost of Bandwidth	90	46	30	15	43	22	32	61
3	Insufficient computers	80	41	35	18	56	29	24	12
4	Shortage of power supply	113	58	30	15	68	35	18	9
5	Poor quality of material resources	97	49	29	15	40	20	29	15
6	Lack of communicating and promoting database to users by Librarian	76	39	34	17	40	20	12	6
7	Low level of computer literacy	98	50	28	14	29	15	40	20
8	Lack of access to Current information on Database	101	52	30	15	32	16	32	16
9	Inappropriate Information for users	80	41	21	11	43	22	51	26
10	No access to full text of	87	45	35	18	43	22	30	15

From Table 4.5 it could be seen that many factors were affecting the provision of electronic information services. The Table shows that power outages which accounted for 143 (73%) of the responses was a major factor affecting the provision of electronic information resources. Another factor as indicated by 134 (69%) respondents was slow Internet services and 131 (67%) respondents indicated lack of access to current information databases. Another factor indicated by 126 (65%) respondents was low level of computer literacy and 120 (61%) respondents indicated high cost of bandwidth.

Inhibiting factors affecting the use of electronic information database by agricultural scientists in the university libraries of the North Central Nigeria.

Information resources are packaged for users with different research interest. Mason (1993) noted that the use of information is essential for all achievements. Brabazon (2001) also contended that publication in scholarly journals allows academic to communicate in a disciplined and rigorous manner with their national and international colleagues. Attempts were therefore, made to ascertain the uses which researchers and students make of information from these databases resources. The researcher provided the respondents with seven ways in which such information obtained could be utilized.

Table 4.6 Responses to the Inhibiting Factors to Use Electronic Information Database

S/No	Types of Response	Mean	STD
	Use of Electronic Database are not adequate		
1	Lecturing method not adequate	80	41
2	Laboratory/Field Research	82	42
3	Write Seminar/Conference paper inadequate	83	42
4	Research Work by scientists not encourage	110	56
5	Training for agricultural scientist are adequate	100	51
6	Lack of generate New Information	79	40
7	Lack of Current awareness	88	45

The finding revealed in the Table 4.6 is the quest for information by the researchers and students in the Agriculture universities for research which accounts for 145 (74%). Closely following this is their zeal to be current in their field, 128 (66%) The data obtained confirms the high value researchers and students placed on access to current scientific literature for their research work.

Strategies for enhancing the provision and utilization of electronic databases to agricultural scientists in the university libraries of North Central Nigeria

Attempt is made to identify the factors that could improve the provision of electronic information databases in the Agricultural Universities especially as it relates to research work, teaching and learning. The researcher therefore, provided the respondents with lists of possible usefulness or benefits in the use of electronic information sources and was asked to indicate their level of acceptance of the improvements. The data collected from the respondents is tabulated in table 4.7.

Table 4.7 Responses to the Strategies for enhancing the Provision Utilisation of Electronic Databases by Agricultural Scientists in the University Libraries.

Availability of capital for the use of electronic Databases	Types of Response								Mean	STD
	Strongly Agreed	%	Agreed	%	Disagreed	%	Strongly Disagreed	%		
Adequate power supply provide easy accessibility of electronic database	90	46	53	27	32	64	20	10	1.907	0.182
The field research improve quality of Agricultural Scientists	110	56	36	18	28	14	21	11	1.795	0.189
Knowledge exchange and training determined the success in the utilization of electronic resources for research	95	49	33	16	35	18	32	16	2.021	0.173
The using of electronic resources helps in providing adequate assistance to database	85	43	48	27	38	19	24	12	2.005	0.176
Eliminate the problem of geographic location in the transfer of information	110	56	36	18	27	14	22	11	1.828	0.187
The use of relevant resource person enhances information database	77	39	48	25	35	18	35	18	2.143	0.167

Table 4.7 shows that, 110 (56%) respondents agreed that the most important of electronic information is the field research improved quantity and quality of Agricultural Scientists work, as well as eliminating the problems of geographical location in the transfer of information. Closely following these, 110 (56%) respondents indicated that adequate power supply provided easy accessibility of electronic database. Another important improvement of electronic information databases as indicated by 85 (43%) respondents were the fact that using of electronic resources helped in providing adequate assistance to database sources.

Discussion

One of the objectives of this study was to find out the type of electronic information databases and Internet portals available in the agricultural based faculties, therefore, the respondents were given a list of databases from which they were required to indicate those that were available in their universities. The data collected and analyzed is presented on Table 4.2.

The availability of the resources could be attributed to the current trends in information packaging and dissemination especially in the field of science. The position is confirmed by Tripathi, Harish & Raj, (2011) studied the usage of electronic resources in faculties. The study discussed use of e-resources, the frequency of their visit in faculties and tools used for searching the information. The study on TEEAL revealed that the database contains, apart from abstracts, complete articles. The implication is that the electronic format is meeting the needs of the users. The study revealed a number of other electronic databases in the agricultural universities such as Epnnet, Geoderma, soil Science Society of American journal (SSSAJ), Journal of Arid Environment (JAE), humanity development (CD-ROM), vide database, wikipedia and agronomy journal This is based on the fact that some databases are updated more frequently new citations may be added more often than in print indexes. Depending on the database, new records may be added daily, weekly, monthly or quarterly. Respectively, the use of electronic databases by the respondents as outlined above tally with the study by Rogers (2001) in which he revealed that the number of Faculty respondents reporting weekly and monthly use of e- journals increases from 36% in 1998 to 54% in 2000. This shows 18% increases in the number of users. Kumar, Davendra (2010), carried out library faculty use of internet services at the University of Agriculture and Technology, Meerut, Uttar Pradesh, India. Faculty gave information on internet usage, favorite search engines, and sources of information about websites, problems faced by users, satisfaction and facilities infrastructure available in the libraries. They revealed that e-journals were being used regularly (...weekly and monthly) despite the various disadvantages associated with the electronic format. The study revealed a convergence of weekly users of electronic databases. It is interesting to note that there is a significant progress in the acceptance and the use of electronic information resources.

The respondents were further asked to indicate if they interact with the system personally or through an assistant. The result shows a very high level of the knowledge of the use of electronic information system by the respondents as 125(88%) of them use the system without assistance. This corroborates the finding of Ramlogan and Tedd (2001) that “majority 146 (72.5%) of 200 respondents expressed high confidence (i.e. almost or only

occasionally need help”). In a similar study on use of resources by researchers in university libraries with special reference to electronic media, Handel (2003) reports that all the 84 respondents used for the study reported that they have a working knowledge of computer. In a related issue, the respondents were asked to indicate if they have access to the information they desired, 104 (71%) indicated in the affirmative, while 21 (14) indicated a no response.

Unfortunately, Agriculture libraries in Nigeria have not been able to meet the needs of most of their users due to the in unavailability of funds. This development has resulted in researchers and students relying more on the internet and CD- ROMs for information. The Open Access initiative has made it possible for articles published in some electronic journals to be accessed freely on the internet. AGORA, HINARI and other digital archives have made it possible for researchers and students in developing countries to have free access to full-text articles of some electronic journals and databases. The availability of these free resources may explain why a high percentage of the respondents used the Internet to obtain agricultural information. Therefore, electronic information is an invaluable source for research and training.

The findings support the report of Agber, Tsokura & Agwu, (2013) studied assessment of online resources usage by Agricultural Scientists of tertiary institutions in Benue State, Nigeria. The study revealed that many type of electronic resources frequently used by respondents included electronic journals, electronic books, abstracts, search engines, video/pictures and encyclopedia. The study shows that socio-economic and institutional factors significantly influenced the use of electronic resources; the user selects only the information needed to answer the specific query. In addition, electronic information sources are often faster than consulting print indexes, especially when searching retrospectively, and they are straight forward when wishing to use combinations of keywords. Similar discoveries were reported by Jagboro (2003) that information from electronic sources provides orientation on a new topic such as starting a new research topic. Ochs (2005) reveals that electronic resources help in providing orientation on a new topic.

The implication of these findings is that electronic databases open up the possibility of searching multiple files at one time, a feat accomplished more easily than when using printed equivalents. The information found can be printed and searches saved to be repeated at a later date. Therefore, it could be said that electronic databases among researchers and students in the Agricultural Universities has far-reaching benefits. It is being use to support research, teaching and learning.

Summary of Major Findings

- i. The study revealed that Agricultural faculties in the universities subscribed to various online databases and all had one or more databases on CD-ROM. databases such as AGORA, CAB ABSTRACTS, AGRICOLA, PUBMED, BIOMED central and African journals online and CD-ROMS such as CABI ABSTRACTS, TEEAL and AGRICOLA are commonly available in almost all the Agricultural libraries in the departments within the universities. The availability of these resources could be attributed to the current trends in information packaging and dissemination especially in the field of science.

- ii. The study also found that that 68 (45%) of the respondents used the electronic databases monthly while 46 (21%) used the electronic database weekly. The access points for these resources are the agriculture faculty and research libraries, Internet cafes, Information resource centers within the Universities.
- iii. With reference to satisfaction with the provision of electronic information services, the study revealed that 120 (74%) of the respondents were satisfied with electronic resources. The researchers and students derived high satisfaction on the available resources, which provided current and up to date information to meet their information needs.
- iv. The inhibiting factors effective to the provision and access to electronic information among the students and researchers, the study revealed that 115 (59%) respondents agreed that slow and expensive Internet service was a major factor affecting the provision of electronic information resources. Another factor as indicated by 101 (72%) respondents was insufficient computers. Other problems included power outages.
- v. Inhibiting factors affective to the use of electronic information databases, it was found out that 145 (74%) of the respondents argued that the research work by scientists were not encouraged. This was closely followed by their zeal to be current in their field which accounted for 128 (66%) The data obtained confirmed that the training of Agricultural Scientists were not adequate to placed on access to current scientific literature for their research work.
- vi. Enhancement of electronic information databases in the study show that 146 (75%) respondents agreed that the most usefulness of electronic information is the improvement in the Knowledge exchange and training determined the success in the utilization of electronic resources for research, as well as eliminating the problems of geographical location in the transfer of information. 143 (73%) respondents indicated that adequate power supply provide easy accessibility of electronic database. Another important usefulness of electronic information databases as indicated by 133 (68%) respondents is the fact that use of electronic resources helps in providing adequate assistance to database information.

CONCLUSION AND RECOMMENDATIONS

Conclusion

In view of the findings of this study, it could be concluded that the provision of electronic databases will continue to have a great impact on research and training in the Agriculture faculties/schools. Agricultural libraries shall attract greater patronage when high quality collections of electronic databases are made available. Thus, the role of agricultural scientists is being challenged to increase information sources to facilitate access to electronic information.

The Agricultural Scientists are aware of all the types of electronic resources and use electronic journals and online databases more frequently than other e-resources. CAB Abstracts, AGRIS and AGORA are more frequently used databases by agricultural

scientists. The scientists require information very quickly, easily and they also need the information in readily usable format for research work. Now the scientists have started making maximum use of electronic databases are satisfied to some extent with the available facilities of electronic information environment in their universities.

Recommendations

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

- i. In view of the huge academic and research resources available through this medium and its pertinence to learning, teaching and research, it would be necessary for the agricultural scientists in the universities to facilitate access through networking. This is one of the effective means of accessing and sharing research information which will enhance collection development efforts and further encourage the scientists to provide more and varied electronic resources and services.
- ii. Greater publicity also needs to be given to the many and varied sources of research information available, so that more researchers become aware and make use of them.
- iii. For maximum utilisation of databases of e-resources, faculty libraries should provide orientation assistance to the users and one credit course GST-610 entitled “Storage and Retrieval of Scientific and Technical Information.
- iv. Libraries should therefore, be effective at integrating print and e-resources in a standardized form according to users’ needs for a wide range of scholarly work.

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