AVAILABILITY AND UTILIZATION OF ELECTRONIC INFORMATION DATABASES BY STAFF OF THE AGRICULTURAL COMPLEX AHMADU BELLO UNIVERSITY, ZARIA

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DECLARATION

I hereby declare that this thesis entitled: Availability and Utilization of Electronic Information Databases by Staff of the Agricultural Complex, Ahmadu Bello University, Zaria has been written by me in the Department of Library and Information Science. The information derived from the literature has been duly acknowledged in the text and list of references provided. No part of this work has been previously presented for another higher degree to the best of my knowledge.

Lakan, Lydia Endaben (Mrs) …… Date ……

CERTIFICATION

This thesis titled Availability and Utilization of Electronic Information Database by Staff of the Agricultural Complex, Ahmadu Bello University, Zaria by Lakan, Lydia Endaben (Mrs.), meets the regulations governing the award of the degree of Masters in Library Science of Ahmadu Bello University, Zaria and was approved for its contribution to knowledge and literary presentation.

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DEDICATION

To my beloved late mother Mrs. Safratu P. Aboki who taught me contentment, hard work and Love for God.

And

To my beloved Husband Mr. Paul D.M.Lakan.

And

To my lovely children Timzing, Nanla and Jinan

And

To my father Rev. Philip D. Aboki who propelled our lives (his children) towards the part of righteousness by the grace of God.

And

To my brothers and sisters, I appreciate you all.

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ABSTRACT

The study was undertaken to determine the Availability and Utilization of Electronic Information Database by Staff of the Agricultural Complex, Ahmadu Bello University, Zaria.

Six research questions ranging from Types of electronic information database, Access to Electronic Information, Utilization of Electronic Information, Usefulness of electronic information, Satisfaction with electronic information provision and factors affecting the provision of electronic information and two hypotheses were investigated. The instruments used were questionnaire and documentary records. The data was treated using frequency distribution tables; percentage and mean scores. A survey method was used for the study. Stratified sampling method was used to select 209 respondents to accommodate the different strata of the subjects involved in the study. The questionnaires that were returned were analyzed using the Statistical Package for the Social Sciences (SPSS).

The study revealed that all the libraries and information centers subscribe to various CD-ROMs and Online databases. The study also recorded a high percentage of the respondents use electronic databases frequently. Reason for utilization of electronic information databases include; research work, to update knowledge in their field of interest and Current awareness. On usefulness of electronic information databases the study found that 113(76.9%) respondents agreed that the most usefulness of electronic information is the improvement in the quantity and quality of publication, 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 Complex. A number of factors that affect the provision and use of electronic information resources in the Agricultural Complex such as, power outages, slow Internet services and insufficient computers were highlighted.

The study concluded that greater publicity need to be given to the many and varied sources of research information available, especially those that are available at no cost, so that more researchers become aware and make use of them.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Agriculture production the world over is the result of a long process in which humanity sought to satisfy its need for nourishment, starting simply with the collection of wild plants, via the selection and planting of suitable cultivated plants, the use of land surfaces for stock farming up to today's market-oriented production (Treitz, 1988). The industrialized nation's economy is still anchored on agriculture, producing the raw materials for the industries.

Agriculture though the main components of the economic sector of the developing countries like Asia, Africa and Latin America, there is still more to be desired. It is, therefore, expected that in the typically agrarian economies of these countries, agriculture should make substantial contributions, which will enable national economic growth to take place on a wide front, as a prelude to industrialization.

Agriculture formed the bedrock of the Nigerian economy and was the major activity and foreign exchange earner prior to the discovery of petroleum. Nigeria was then self sufficient in terms of food production. However, with the shift to the oil and industry and coupled with population growth, Nigeria eventually had to start importing a lot of food. This situation became a source of concern to many stakeholders. According to Agbobu (2000) ''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 for the country''.

A lot of programs and policies such as Operation Feed the Nation (OFN), Green Revolution (GR) and Structural Adjustment Program (SAP) were drawn up to take the nation back to its soil and other areas such as Animal Husbandry, Crop production, Forestry, Fisheries etc. Agriculture in essence should among other things;

(a) Increase food production considerably, so as to improve the existing nutritional levels, in quantity and quality, for a rapid increasing population.

(b) Produce export crops as a source of foreign currency and

(c) Support industrial development.

Agricultural Research

In Nigeria, the overall impact of agricultural research in increasing food self-sufficiency for the promotion of the rural economy is on the increase. Okigbo (1994) conceptualized research as ‘‘carefully planned and executed enquiry based on application of scientific method. Its objective is to discover something new, develop new thing or test, confirm, reject, adopt and otherwise modify and establish relationships among what is known or discovered and the application of the knowledge’’. Agricultural research therefore seeks new knowledge to support and strengthen the existing systems, and to establish new ones by applying scientific and usually experimental methods. These range from simple trials to advanced original research, according to need.

Agricultural research according to Arnon (1987) involves by its very nature the application of basic science to the solution of problems of immediate or prospective usefulness to agriculture. It draws heavily on various scientific disciplines as many of the practical agricultural problems depend on the inter-relationship between plants, animal,

soil and climate. Research findings in any of these sciences may find entirely unforeseen application in agriculture. In effect, therefore, the objective of agricultural research is to apply a wide variety of scientific disciplines to the development of new approaches to agricultural production and to the solution of the problems besetting the agricultural sector.

Research has therefore remained a very important tool for a virile agricultural development in both developed and the developing areas of the world. Agricultural research in higher institutions of learning and Research centers have two basis functions - teaching and research, with the aim of preparing agronomist or veterinarians for the functions of planning, production, technology, research and extension in the field of agriculture. Research at these establishments has two objectives: to extend the field of human knowledge and to contribute to the training of students.

Agricultural Information

Mbwana, (1987) posit that agricultural research and training are the rock foundation of a sound agricultural development in any nation and the success of this to a large extent depends on access to information. Information on agriculture span across major subject fields such as Animal production, Nutrition, Crop and Plant Science, Soil Science, Agricultural Engineering, pharmacology, the environment etc. There are many sources of this information such as in articles published in scientific literatures, conference proceedings, textbooks, informal communications and other publications. The agricultural researchers and lecturers according to Bose (1980) are always looking for information that will help them to do away with repetitive research and training and to

draw from the findings of research conducted elsewhere. They must therefore have access to information.

The Role of Libraries and Information Centers in Agricultural Research

Libraries according to Johnson (1993) have played a prominent role in disseminating agricultural information by providing end users with direct access to information sources, originally through the library shelves and increasingly, by electronic means. The introduction of Internet and CD-ROM (Compact Disk Read Only Memory) into library and information services has greatly enhance the efficiency and effectiveness of library services. Books and journals that have hitherto been impossible to keep current copies in research and academic libraries especially of the developing countries are available electronically and instantaneously as they are published. Oyinloye (1998) observed that the advantage of this development to library is that it renders the maintenance of large collection of printed materials and subscription to wide range of journals unnecessary.

Agricultural Electronic Information Database

The term “Electronic database’’ according to Molino (1982) denotes a stock of bibliographic references stored electronically with the retrieval mechanism needed for easy and effective access. They are one of the most important advances of the last few decades in the field of data processing. They sprang up in response to rapid advances in scientific research and technological development in industrialized countries and the needs associated with these advances. Not only have they laid the basis for easy, rapid

and efficient access to the vast fund of information available, but also analyzing the information.

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 the 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; Commonwealth Agricultural Bureau (CAB) Abstracts, Agricultural Information Services (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.

The Use of Electronic Information in Agricultural Research

Woolston (1984) stated that Information is one of the fastest growing resources of the post-industrial society. Its dissemination has been very much promoted by revolutionary developments in technology. Agricultural researcher and producers already know that information is important and valuable. According to Weiss, Van Crowther and Bernardi (2000) users of Agricultural information in developed countries pay for information ranging from updates on weather condition, soil nutrient status, pest management, to advice on genetic seed line, plant for various field conditions and animal reproduction.

Western Universities and research institutes have extensive libraries of scientific journals, books and other publications. Users can also conduct computer searches to

identify appropriate references, articles and abstracts on CD-ROMs or On-line. Many National Institutions and International Agricultural Research Centers have access to CD-ROMs from Food Agricultural Organization (FAO), AGRIS and CABI among others. According to Speedy (1994), the lack of up to date information on agriculture is a major constraint in developing countries. Recognizing this, major International Organizations and Donor agencies like Technical Centre for Agriculture and Rural Cooperation (CTA) FAO, CAB International, Word Health Organization (WHO), Rockefeller Foundation etc sought to facilitate access to scientific and technical information for African, Caribbean and Pacific (ACP) Countries. Electronic information in the context of agricultural research therefore makes scientific information readily available for an increase in the quality and effectiveness of research. It also enables researchers and decision makers in developing countries have a better access to the work of the global scientific community and thus would be better able to incorporate proven scientific knowledge into research and outreach programme.

In recognition of the importance of electronic information for research, libraries and information centers either enters into subscription with international organizations that produces such resources or solicits for support from donor Organizations like FAO, CTA and funding agencies to acquire electronic information databases. Users of peer review journals online are required to register with the producing organization and use is password controlled. Example of online resources provided for the Agricultural Complex staff that facilitates access through the use of password word is Access to Global Online Research in Agriculture (AGORA) African Journals Online (AJOL) and Health Internet-work 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 centers. Individual users can also subscribe to publishers cites and obtain full-text or abstract to journal articles.

Question and Answer Services (QAS)

This service was created in 1985 and responds to request for information on agricultural and rural development from individual and institutions in developing countries. To provide the most efficient response possible, the QAS make use of large international data bases such as AGRIS, CABI Abstracts, AGRICOLA and BIOSIS. It also uses specialized services such as Agromisa, CAB Abstracts among others to provide publications and primary documents. Most of the clients of QAS in 1993 were researchers, lecturers, students, extension workers, farmers and document list.

The CD-ROM Project

Paquot and Berque (1995) reports that between 1988 and 1992, CTA provided 35 documentation centres in 32 ACP countries with agricultural databases on CD-ROM, personal computers, UPS (Uninterrupted power supply), laser printer and a CD-ROM reader. In addition, FAO, WHO, Scientific publishers and Mann Library of Cornell University USA are involved in helping agricultural research and development institutions to use the internet to access agricultural databases.

Internet Resources

i) Access to Global On-line Research in Agriculture (AGORA):

This is an Internet portal with links to major scientific journals, bibliographic databases such as AGRIS, CAB Abstract, and AGRICOLA, Pub Med, SciELO, HIGH WIRE etc and other Internet resources related to agriculture. It is developed

by FAO in collaboration with W.H.O, major scientific publishers and Albert Mann Library of Cornell University, USA. It includes information on sciences and social sciences such as environmental sciences, Food policy and agricultural economics. It is one initiative that has given agricultural researchers and lecturers from the developing economy an opportunity to have access to a wide range of sources of On-line resources at a low cost.

A few of the founding publishers contributing to AGORA Portal are: *Blackwell publishing, CABI Publishing, Elsevier, Kluwer Academic publishers, Lippincott, Williams and Wlkings, Nature publishing Croup, Oxford University press, Springer – Verlag, John Wilseys and Sons etc.

ii) The Health Internet-work Access to Research Initiative (HINARI)

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 1500 journals from 6 major publishers including: *Blackwell, Elsevier Science, the Harcourt Worldwide STM Group, Wolters Kluwer International Health and Science, Springer Verlag and John Wiley.

Ahmadu Bello University (ABU) Agricultural Complex

Agricultural research in plant, animal, soil and climate in ABU Agricultural Complex is principally carried out by three National Research Institutes and two Faculties. Each of these has a mandate for research and training on a specific area. These Institutions and Faculties were established on the assumption that the performance of the agricultural sector is influenced by the effectiveness of agricultural

research in generating new technologies, ideas and management practices for boosting agricultural production. Therefore, the agricultural complex comprises of the following:

1. Institute of Agricultural Research (IAR)

The Institute of agricultural Research (IAR) was set up in 1924 in Samaru Zaria as a research station for the Federal Department of Agriculture. It has been affiliated with Ahmadu Bello University Zaria in 1962.

The national mandate of the Institute is to conduct research into the genetic improvement of sorghum, groundnut, cotton, cowpea and sunflower; to research into farming system of the Northwest zone; and to maintain a strong research extension liaison for the dissemination of results. The institute has a strong horticultural programme, Ado (2006).

2. National Animal Production Research Institute (NAPRI)

The National Animal Production Research Institute was established in July 1976 in Shika, and is affiliated to Ahmadu Bello University. The Institute has the country-wide mandate to conduct research into the genetic and reproductive improvement of cattle, sheep, goats, poultry and other livestock of economic importance, to develop pasture and other plants for use as animal feed, to improve livestock production and management practices and integrate livestock into farming systems, Bukar, Adamu and Bashil (1997).

3. National Agricultural Extension and Research Liaison Services (NAERLS)

The National Agricultural Extension and Research Liaison Services (NAERLS) originated from the Northern Nigeria Ministry of Agriculture in 1963, when a specialist

services section was set up at IAR, Zaria, to provide research – extension liaison services between IAR and the Field Services Division of the Ministry. In 1975 it metamorphosed into an autonomous Institute Liaison Services (AERLS) with the agricultural complex of Ahmadu Bello University. With the reorganization of research institutes in 1987, NAERLS was mandated to cover the whole country.

The mandate of NAERLS includes the development, collation, and dissemination of appropriate agricultural technologies and the monitoring and evaluation of agricultural information. It is a specialized research –extension network which works closely with all other institution technology development and dissemination. NAERLS activities are executed through the following programmes.

- Agricultural engineering and irrigation technology transfer
- Crop and forestry technology transfer
- Farm broadcast, farm management and cooperative
- Food technology and rural home economics
- Livestock and fisheries technology transfer, planning and evaluation
- Publication and publicity. Bukar, Adamu and Bashil (1997)

4. Faculty of Agriculture

The Faculty of Agriculture was established in October 1962 as one of the first six faculties of Ahmadu Bello University. Until 1967 classes in the faculty of Agriculture were carried out in temporary building in the main campus. It was considered wise, when considering staff availability, teaching and research needs of students and staff, that the faculty should be sited at I.A.R so that its staff would help in the teaching and supervision of students while I.A.R research farms would be used for teaching and for research.

At the inception of the faculty and until the 1965/66 session, the faculty functions as a single unit, i.e. there were no departments. However, in the 1965/66 session four departments were established viz: Agricultural Economics and Rural Sociology, Animal Science, Plant Science and Soil Science. The following additional Departments were created; Crop Protection (1968) Agronomy (1970) and Agricultural Engineering (1975). However, in 1976 the Department of Agricultural Engineering was transferred to the Faculty of Engineering. B.Sc (Agric) degree programme stated at the inception of the faculty which M.Sc and Ph.D degree programme started in 1973/74 sessions with the Department of Crop Protection pioneering. (ABU, 1987)

5. Faculty of Veterinary Medicine

Between 1947 and 1962, several surveys were conducted throughout West Africa for the purpose of selecting a suitable location n for a college of veterinary medicine. All the survey teams recommended that Nigeria should have a Veterinary College. Consequently, in October 1963 Kansas State University entered into a contract with the Federal Government of Nigeria for the establishment of a Faculty of Veterinary Medicine at Ahmadu Bello University, Zaria. The Faculty has since inception-undertaken changes in curriculum development to meet current development in Veterinary Medicine.

There are six numbers of departments in the faculty viz: Veterinary Parasitology and Entomology, Veterinary Anatomy, Veterinary Pathology and Microbiology, Veterinary Pharmacology and Physiology, Veterinary Public Health and Preventive Medicine and lastly Veterinary Surgery and Medicine with the following broad areas for research and training:

- Animal Health and Reproduction

- Poultry Health and Reproduction
- Animal Drug use, misuse and interaction
- Pharmacology
- Zoonotic, ABU (1987)

1.2 **Statement of Problem**

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 results in an increase in food production and income generation. In a world where millions of people go hungry every day, food demand is likely to double in the next thirty years (CGIAR 2004 – 2005). Advances in agriculture are critical if nations are to reduce hunger and promote growth and development.

Availability and utilization of electronic information databases among researchers and lecturers have the potential of increasing the awareness of the value of information in agricultural research, teaching and learning. Information technology facilities have turned the world into a global village and most information is published electronically. This also promotes the development and growth of diverse new information services. As collaborated by Ochs (2005) and Oduwale and Akpati (2003), with electronic information source, users have a wider source of information.

There is no doubt that the ABU Agricultural Complex has over the past two decades been engaged in agricultural research and training through the agricultural research institutes and the faculties. Sources of information available to them have been

diversified with the introduction of computers in information storage, retrieval and dissemination. The complex has a good number of electronic sources of information on CD-ROMs and Online such as CAB Abstract, Medline, Vet CD, Beast CD, AGRICOLA, AGRIS, TEEAL, AJOL and internet portals such as AGORA and HINARI.

Previous studies such as Amune (1983), Shika (1987), and Oyedum (1992) etc have been conducted in the area of traditional library information system. Some of these studies looked at accessibility and utilization of non-electronic information resources such as books, journals, pamphlets and other forms such as Audio Visual material. Suffice to say also that research have been carried out on Utilization of Internet facilities such as conducted by Oni (2005) and Nwaeze (1990). These studies did not look at the area of Electronic information database access and use in agricultural complex of ABU. It is on this ground that this study is being conducted.

1.3 **Research Questions**

1. What are the types of electronic information databases available in agriculture-based faculties and research institutes in A.B.U, Zaria?
2. How often do researchers and lecturers use electronic information databases in the Agricultural complex of A.B.U Zaria?
3. What do researchers and lecturers in the Agricultural Complex of A.B.U use Agricultural information database resources for?
4. How useful are these agricultural databases resources to Researchers and Lecturers in the Agricultural Complex of ABU Zaria?
5. To what extent are researchers and lecturers in agricultural based

research Institutes and faculties in A.B.U, Zaria satisfied with electronic Information database resources?

6. What are the factors that affect the use of electronic information sources by researchers and lecturers in the agricultural complex?

1.4 Objective of the Study

The overall goal of the study is as follow:

1 To determine the types of electronic information databases available in agriculture-based faculties and research Institutes in ABU, Zaria?

2 To find out how often researchers and lecturers use electronic information databases in the Agricultural Complex of A.B.U Zaria?

3 To find out what researches and lecturers in the Agricultural Complex of A.B.U use Agricultural information database resources for?

4 To determine the usefulness of these agricultural databases resources to faculty and institute members?

5 To determine the extent to which researchers and lecturers in agricultural base research institutes and faculties in A.B.U, Zaria satisfied with electronic information database resources?

6 To determine the factors that affects the use of electronic information resources by researchers and lecturers in the agricultural complex

1.6 Basic Assumption

The researcher conducted the study based on the following assumption:

1 That one of the effective ways to provide researchers and lecturers with up-to-date information on agricultural research is through electronic information databases.

2 That electronic information database is available for use by Agricultural researchers and lecturers in agricultural complex of ABU Zaria.

3 That researchers and lectures require electronic information databases to meet their research and teaching activities.

1.7 Significance of the Study

In this age of Information and Communication Technology (ICT), more than half of current journal articles and research results are published in electronic format. A study on availability and utilization of electronic databases in the Agricultural Complex of ABU Zaria will determine the extent to which agricultural researchers and lecturers have access to and use these sources of information.

Secondly, the study would serve as a feed back mechanism to the stakeholders in electronic information provision within Ahmadu Bello University Agricultural Complex and outside. It will assist in policy formulation and development of appropriate strategies to ensure availability and use of the resources.

Finally, the findings of the study will contribute to the depth of literature on electronic information database access and use.

1.8 **Scope of Study**

This study is limited to the following Agricultural research institutes and faculties within the Ahmadu Bello University Agricultural Complex.

I. Faculty of Agriculture
II. Faculty of Veterinary Medicine and Human Health
III. Institute for Agricultural Research (IAR)
IV. National Animal Production Research Institute (NAPRI)
V. National Agricultural Extension and Research Liaison Services. (NAERLS)

The study is also limited to electronic information databases found in these Institutions such as.

I. ACCESS TO GLOBAL ON-LINE RESEARCH IN AGRICULTURE (AGORA)
II. AFRICAN JOURNALS ONLINE (AJOL)
III. AGRICULTURAL ONLINE ACCESS (AGRICOLA)
IV. BEAST CD
V. BIOMED CENTRAL
VI. BIOSIS
VII. BMJ PUBLISHING
VIII. COMMONWEALTH AGRICULTURAL BUREAU INTERNATIONAL (CABI ABSTRACTS)
IX. DIRECTORY OF OPEN ACCESS JOURNAL (DOAJ)
X. HIGH-WIRE
XI. INSPERI
XII. MEDLINE
XIII. PUB MED
XIV. SCIENTIFIC ELECTRONIC LIBRARY ON-LINE (SCIELO)

XV. THE ESSENTIAL ELECTRONIC AGRICULTURAL LIBRARY (TEEAL)

XVI. THE HEALTH INTERNET-WORK ACCESS TO RESEARCH INITIATIVE (HINARI)

XVII. VET CD

This means that accessibility and utilization of other forms of information sources would be excluded.

1.9 List of Abbreviations

ACP: Caribbean and Pacific Countries

AGORA: Access to Global Online Research in Agriculture

AGRIS: Agricultural Information Service

AGRICOLA: Agricultural Online Access

AJOL: African Journal Online

BIOSIS: Bioscience Internet Services

CAB Abstract: Commonwealth Agricultural Bureau

CTA: Technical Center for Agricultural and rural Cooperation

DOAJ: Director of Open Access Journals

FAO: Food & Agricultural Organization

GR: Green Revolution

HINARI: Health Internet-wok Access to Research Initiative

INASP PERI: Program for the Enhancement of Research Information

OFN: Operation Feed the Nation

SAP: Structural Adjustment Program

SciElo: Scientific Electronic Agricultural Library

TEEAL: The Essential Electronic Agricultural Library

TROPAG: Tropical Agriculture

VetCD: Veterinary Science CD-Rom

WHO: World Health Organization

References

Ado, S.G (2006). Available Postgraduate Research Opportunities at the Institute for Agricultural Research, Samaru. ABU Postgraduate School Lecture Series. pp.2

Agbobu Chris (2002). "Sustainable development through agriculture: Current state of agriculture in Nigeria and recent government effort to improve the sector". Sustainable development through agriculture by Ogbera Felix (ed) pp. 30.

Ahmadu Bello University (1987) A history of Ahmadu Bello University, Zaria 1962-1987 A.B.U Press pg 172-174

Arnon, Isaac (1987). Modernization of Agriculture in Developing countries: Resources, potential and problems. 2nd ed John Wiley ad Sons. Chichester. pp. 1-20.

Bose, L (1980). "Agricultural Information to hasten development". Proceedingps of the Sixth World congress of the International Association of Agricultural Librarians and Documentalists. Manila, March 3-7 1980.

Bukar Shaib, Adamu Aliyu and J.S Bakshi (eds) (1997) Nigeria, National Agricultural Strategy Plan: 1990-2010. Edited by. African books ltd Ibadan pp.71-116

Chandler, G. (1976). "Proposed development of resource sharing network (UNISIST, NATIS, ALAIST)' *Information Library Review* Vol.10 No.2, pp. 179-86.

Consultative Group on International Agricultural Research (CGIAR) 2004 – 2005 (2005) Research and impact¨CGIARand Agricultural Biotechnology. Retrieved 31st January,2006 form http://www.cgiar.orga/impact/agribiotech.htm/ p.1

Deretchin, Lousise F., Lynn C. Yeoman, Charless L. Seidel (1988). "Students Information Resource Utilization in problem – Based learning". Med. Edu. On- line (Serial on-line) 1998 4:7 http://www.utmb.edu/meo/

Gepasin, D. (1990). What is research in the context of national agricultural research system? KRA Lecture ISNAR Wagenegin pp 16.

Havard – Williams, P. (1976). "The folly of neglecting that natural resource Information" Library Association Records Vol.28 pp. 409.

Mbawana, S S (1987). "The role of information in research and training in Tanzania". Journal of Library and Information Science. Vol12 no1 pp 38-45
Metcalfe, John R. (1993) "Where is the information industry going? A model for the delivery of information in the developing countries. International symposium on new information technology in agriculture. November 10th –12th. Bonn, Germany, pp. 31-35

Molino, Enzo (1982) "Databases: Consideration of relevance to the developing Countries". Unesco Journal of Information science, Librarianship and Archives Administration. Vol IV No.4 October- December 1982 pp. 245-252

Nwaeze,A (1990) Information needs and information utilization pattern of non Academic Staff of University of Ibadan. Unpublished MLS Thesis. University of Ibadan, Nigeria

Ochs, Mary (2005). TEEAL (The Essential Electronic Agricultural Library): User study Report to Rockefeller Foundation. January, pp. 1-22.

Oduwosle A.A. and Akpati, C.B. (2003) "Accessibility and Retrieval of Electronic Information at the University of Agriculture Library Abeokuta", Nigeria L*ibrary review* Vol.52 no 5 pp 228-233.

Okigbo, B.N. (1994). Agricultural Research policies, objectives and priorities: A critical review. In Shaibu, B et al (ed.). Towards Strengthening the Nigerian Agricultural Research System. (Edited by NARP). Ibadan University press. pp. 27 – 72.

Oni, Folashade Adeyemi (2005) Utilization of Internet facilies among Library and information science academic in Nigerian universities. Unpublished MLS Thesis. Ahmadu Bello University Zaria Nigeria

Oyinloye, A.M. (1998) "The internet: Challenges of academic libraries in Nigeria" Focus 29th (3) pp. 140-150.

Paquot, Elisbeth and Pascal Berque (1995) Summary of the achievement of the CTA since the seminar "Montpellier 1", 1984. *In* The role of information for rural development in ACP countries: review and perspectives- Proceedings of an international seminar. Montpellier, France 12-16 June pp. 62

Pickard, Alison Jane (1998) "The impact of access to electronic and digital information resources on learning opportunities for young people: a grounded theory approach". Information Research, Vol. 4 No 2 October pg 1-7.

Speedy, A.W (1994) “The new communication media in livestock”. World Animal Review (80/81) 3 and 4 pp. 13-18.

The Essential Electronic Agricultural Library (TEEAL) Retrieved 2nd February, 2006 form www.teeal.cornell.edu

Treitz, Warner (1988) Transfer of agricultural technologies through dissemination of technical and scientific information. Agriculture in the year 2000: The case for ACP countries – proceeding pp75.

Weiss Crowder and Bernerdi (2000) “Communicating agrometorological information to farming communities”. Agricultural and Forest Meteorology 103 (2000) pg 185-196.

Woolston, J.E. (1984). “Information exchange in the north-south context: Is there more to gain through cooperation than in trying to establish a new market”? In Aslib proceeding; Vol 30 (1), Jan. pg. 7-14.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Introduction

The objective of this chapter is to review the sources of information relevant to the current study. This will enable the researcher put the study in the right perspective. References to what is considered relevant to the study will be consulted from textbooks; journals (CD-ROM, on-line and print) reference materials etc.

To do this effectively, the review is organized in the following manner: The concept of information, Electronic information database (development, characteristics and essences); Access and use of electronic information databases; Agricultural information databases in Nigerian Universities and Research Institutes; Information utilization; Impact of electronic information on agricultural research; Constraints on the use of electronic information sources; and Summary of the review.

2.1 The concept of information

Information has been variously defined. A few examples may suffice. Dictionary of behavioral science by Wolman (1975) defines information as “knowledge of a particular fact or circumstance gained through communication, research or instruction.” Burch and Starter (1974) see information as the increase in knowledge obtained by the recipient by matching proper data elements to the variables of a problem. It is thus, the aggregation or processing of data to provide knowledge or intelligence.” In another dimension, Davies (1986) defines information as ‘‘that knowledge - or conceptual context – which has to be perceived.” However, Hall (1978a) defines information from the

semantic view and pointed, “Information is what is derived from the data in the mind of the person receiving it. The information derived 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.

On the other hand, Burch (1989a) define information as “data that have been put into a meaningful and useful context and communicated to a recipient who uses it to make decisions. Aboyade (1987) observed that ‘it is in the recognized capacity of information to bring significant structural change within a society that makes it so critical in the development processes. To produce the desired change in human behavior, the process by which information get transferred from one source to another certainly deserves the utmost attention.

Hall (1978b) and Burch (1989b) outline several features that determine the utility of information such as novelty i.e. possessing the quality of being new, different and interesting, accurate that is clarity of information, free from bias and accurately reflects the meaning of the data on which it is based, thus conveying an accurate picture to the recipient. Others include, timeliness i.e. availability of information when it is needed as a basis for a decision and lastly, relevance i.e. having bearing on the matter at hand. 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.

2.2 Electronic Information Database

According to Gray (1976a), database is an organized collection of information or data usually in computer readable form. Generally they are made available for use by on-line or off-line search services. These search services have computers and software that facilitate retrospective search of one or more databases in order to locate information or references in answer to a specific query.

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.

2.2.1 Development of databases

When computers first came into use as stated by Wright (1990) experimental databases were created to explore their potential for storing and searching for data at very high speed. The medium on which databases were stored was the magnetic tapes, usually searched sequentially. By 1960s, magnetic disc were used for random access of data. Accordingly, Giovannetti and Meissonnier (1987) reported that between 1963 and 1965, the National Aeronautics and Space Administration (NASA) and the Defense Department, USA pioneered the production of the first databases. The National Science Foundation also funded the production of databases in Chemistry, engineering and physic by not-for-profit organizations. Database processing during this period as indicated was done in the batch mode. That is, retrieval questions were collected from

many users into one batch and then matched against a database all at one time in a sequential search. The service offered by the centers was called selective dissemination of information (SDI). It was provided for users whose interest profiles were maintained by the information center.

1. CD-ROM Databases

A compact disc (CD) according to Risopoulous (1988:78) is a laser – read (also termed optically read) data storage device on which audio, video or textual material can be stored. One application for the 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. A survey of CD-ROM in European libraries by Nelson (1990) sees Europe as the fastest growing market for CD-ROM. He reports that 80% of CD-ROM users worldwide are Universities. Wright (1990)

sums up the prospect on CD-ROM as follows: “CD-ROM could well prove to be one of the more effective aspect of information technology of use to developing nations It does not depend on expensive infrastructure such as telecommunication networks or large computer systems … The compact disc has made an inroad into libraries in the USA and Europe, thus, it is important that the developing world also keep abreast of this exciting technology.”

African university libraries are not also new to CD-ROM database services. In Nigeria Mosuro (1996) and Oduwole and Akpati (2003) described the CD-ROM services in the University of Ibadan and University of Agriculture Abeokuta respectively; Newa (1994), Salanje (1995) and Kiodo (1997) of Southern Africa also describe the experience of the University of Dar es Salaam in providing CD-ROM services.

2. **On-line Databases**

Giovannetti and Meissonnier (1987b) amply pointed out that bibliographical databases (on-line or CDROM) originated as a by-product of the computerization of printed abstract journals and that publication of most international organizations such as the FAO, WHO, CAB International, etc constitute major information for On-line files available from 1972. In line with the above, Gray (1976b) defined Online Database as ‘‘a collection of bibliographic information kept in a computer or a central computer and retrospective search is made possible from a distance computer terminal through the use of soft wares’’. By means of time-sharing many users can search the record simultaneously. Distance is no barrier. The procedure according to him was to type on the terminal keyboard a request for a search on a particular topic. The machine replies

immediately by displaying a list of citations. If these were not exactly what are required, the search request can be modified and a new list obtained.

One of the first organizations to make use of on-line information database as pointed out by Alan (1984) was the US National Library of Medicine. This was followed in the mid 1960's and beyond by a number of groups who set up databases and On-line facilities. Examples are the Lockheed and SDC (System Development Corporation) BRS (Bibliographic Retrieval Service) BLAISE (British Library Automated Information Services) Info line and ESA (European Space Agency). On-line search techniques can be carried out by either author, title of publication, subject area or keyword. Any of these methods will display the relevant information a user can choose from.

Characteristic of Electronic Database

Some of the characteristics of On-line and CD-ROM medium for information access that made them valuable sources of information and also for adoption in developing countries as enumerated by Nichollas and Majid (1989) are: massive storage capacity, economy, durability, on-site availability and un restricted access, end-user friendliness, multi-media capability and portability and also the fact that they are micro-computer based which allow for ease of data manipulation and down loading. In addition is the falling price of personal computers and their periphery which has made it possible for libraries, organizations and individuals to own at lest a workstation. Internet connectivity is becoming a lot easier for most organizations and institutions in developing countries through the help of international agencies.

Essence for Electronic Databases

Most electronic information data bases are developed mainly to make scientific information readily available in order to increase the quality and effectives of research particularly in low – income countries of the world. Electronic databases such as the TEEAL, CABI Abstracts, AGRICOLA, AGRIS, Medline, PubMed, High wire, SciELO, BioMed, African journals online and Internet portals like AGORA and HINARI which consist of databases from different organizations and publishers, etc were developed based on the premise that by providing access to the research literature on agriculture, environmental sciences and related discipline, researchers and decision makers in the developing countries would have better access to the work of the global scientific community. Thus, they would be better able to incorporate proven scientific knowledge into their research and outreach programs.

The overall objectives of developing electronic databases are summed up as follows;

1. Access to high quality and relevant literature
2. Increase in the quality and effectiveness of research and training.
3. Increase in the awareness of research in other part of the world.

2.3 Access and Use of Electronic Information Databases.

From the view of Susan (1996) many universities and research institutes with escalating material cost, especially journals are moving from a holding to an access to information policy. She however, pointed out that electronic sources of information are

not all that cheap. There are cost implications both in terms of hard and soft ware installation.

Taimiyu (1999) conducted a study on World Wide Web/ Internet and information services in Nigeria in the new millennium. The study reveals the infantile state of Internet infrastructure and services in Nigeria due to the dearth, unreliable and exorbitant cost of telecommunication. In addition, very few Nigerians have access to computers at work or home. The situation, he 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. Articles in periodicals according to Gray (1976c) and Frank (1996), however, comprise the main and most important part of scientific records. Most of these periodical articles are published in foreign journals. Libraries in developing countries possess only a very small proportion of these journal articles of interest to researchers and lecturers due to dwindling financial resources. Information technology however, has brought about parity to access to scientific information for the developing nation with their counterparts in the developed nations. There is a wider portfolio of information sources from which scientist and other researchers can choose. 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, which facilitates online access, is the interconnection of computers from different geographical locations. Databases are created by different organizations 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 Internet 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.

Richardson (1997) in conducting a research on the impact of internet information on rural development opportunities for forestry, a study similar to this, concluded that internet information sources for researchers and training is increasingly being accessed by researchers and scientist in the field of forestry. This is attributed to increase in the availability and accessibility to such source.

Jensen (1998) also pointed out that due to an increasing awareness of valuable resources on the Internet, countries like Tanzania and Ghana with monopolistic Public Telecommunication Operation (PTO) liberalized Internet Service provision. This has greatly affected scientific research in Tanzania because users are being connected to quality and current resources. However, Tommey and Burton (1998) studied the use and

attitudes of faculty members from Sciences, Engineering, Arts, Business and Education in a British university towards electronic format via CD or the internet. The result shows that small percentage of faculty members used electronic journals. The modest use is attributed to the lack of electronic journals awareness and of relevant journals. Accessibility to electronic journals from their workstations is a top perceived advantage. Although the study is on both attitude and use, the outcome of use by science faculty is a point of reference to discuss the outcome of users of electronic information in the Agricultural Complex of ABU.

Ojedokun (2001) conducted a study on Internet access and usage by students of the University of Botswana. The study is similar to the present study in terms of electronic information use but is different by population. He investigated the adequacy of the usage of the internet by students, as well as the problem students faced in its use. The study revealed that computer with the internet facilities at the time of the study were inadequate hence many of the students do not have access to the required information. It also revealed that though quite a number of students were aware of the immense benefits of its use to academic studies, they lack the necessary searching skills to make effective use of the facilities.

In a four- campus survey of faculty use of electronic information technologies and resources by the SUNY university Center Libraries conducted by Adams and Bonks (1995) include responses from all academic disciplines and measured the use and frequency of the use of electronic information resources. Variations in use among faculty in disciplines is given but the conclusion stated that, in general, the most common

obstacle to the use of electronic by faculty is a lack of knowledge about what is available, and that user training is considered by faculty to be high priority need.

2.4 Agricultural Information Databases in Nigerian Universities and Research Institutes

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, technologies and the humanities. Some of the sources currently in use in some Nigerian Universities and in Agricultural Research Institutes described by Nielsen (1985) Giovanmetti and Meissonnier (1987b) and Blajan and Welte (1988) are: -

Agricultural Information Services (AGRIS)

AGRIS is a database created by FAO in 1974 with bibliographical references indexed by the organization and also by cooperating centers 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 centers. It also supports the setting up and operation of agricultural information systems in developing countries. It objective is to overcome duplication of effort by specialized information services and to improve their efficacy.

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.

Commonwealth Agricultural Bureau International (CABI ABSTRACTS)

CAB Abstracts is the most comprehensive bibliographic database covering agriculture, forestry, human nutrition, veterinary medicine, and the environment. Commonwealth Agricultural Bureau International produces it. Over 6,000 academic journals are scanned and abstracted annually to go into the database.

Beast CD

Beast CD contains information mostly on large animal management, production and technology. The index contains information dating from 1973 forward.

VET CD (Veterinary Science Database)

Vet CD covers all aspect 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.

Medline

Medline is the database version of index medicus, and it covers many aspect of veterinary medicine, particularly small animal (leaving many aspects of large animals to be dealt with by AGRICOLA). The National Library of Medicine USA produces it. It provides coverage of worldwide biomedical literature and has a good coverage of human medicine. It includes publications from 1975 forward.

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 1993 – 2003 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; 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)

AGORA is an Internet portal with links to major scientific journals, bibliographic databases and other Internet resources related to agriculture. It is developed by FAO in collaboration with World Heath Organization (WHO), major scientific publishers and Mann 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 researcher, lecturer, 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 Wlkings, Nature publishing Croup, Oxford

University press, Springer – Verlag, John Wilseys and Sons etc. The following databases can be accessed through the AGORA Portal.

PubMed

PubMed is a service of the National Library of Medicine that includes over 16 million citations from MEDLINE and other life science journals for biomedical articles back to 1950s. It includes links to full text articles and other related resources.

Scientific Electronic Library On-line (SciELO)

SciELO is a virtual library and provides free access to scientific journal articles from Brazil, Chile, Cuba, Span, Latin – America, the Caribbean, Spain and Portugal.

High-wire

High wire is a division of the Stanford University libraries. High wire press host the largest repository of free full text peer reviewed content with 918 journals 1183 free, full text articles On-line.

African Journals Online (AJOL)

AJOL is a database of journals published in African, covering the full range of academic disciples. The objective of AJOL is to give greater visibility to the participating journal and to the research convey. It was initiated in May 1998 as a pilot project managed by the international network for the availability of scientific publication (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

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 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)

DOAJ is aimed at increasing the visibility and eases of use of open access scientific and scholarly journals thereby promoting their increasing usage and impact. DOAJ defines Open access as the right of user to read, download, copy, distributes, print, search or link to the full text pf 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. Emersld, Gale, Oxford University Press, OVID (Silver Platter), Springer and the royal society

The Health Internet-work Access to Research Initiative (HINARI)

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 1500 journals from 6 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 2002, 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. More than 70 publishers are offering their content in HINARI.

2.5 Information Utilization

Line (1974) consider use as ‘‘what an individual actually uses. It is a result of information seeking, browsing or accidental discovery. Information has to be gathered, processed for it to be useful. Malima (1989) pointed out that no planning and development can take place without information. He stressed that all development is based on effective utilization of information. Accordingly, Blajan (1979) stated that information utilization leads to an increase in knowledge and understanding of a phenomenon. In the same vein, Robert (1975) noted that an individual who reads, view, listen or browse on an information resources is using those materials in the expected way. That is to say an expressed demand has been satisfied and use has taken place. However, for information to be used effectively, it has to be systematically collected, organized and must be readily available for users on demand.

2.5.1 Utilization 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. Review of related literature enables a researcher to be focus and work within a frame of reference. The agricultural researcher and lecturer is involved in research and training.

Scientific research deals more an experiment with the hope for a new idea while teaching introduces new concepts derived from research. The utilization of information resources has a great influence on both.

Ochs (2005) conducted a user survey on an offline database. The study collected both qualitative and quantitative information using different tools such as interviews, questionnaires and a bibliometric analysis from over 1000 users in 16 countries in Africa, Asia, and Latin America. The study indicates a high utilization of the database and also a high level of satisfaction by users. Consequently, a user of the information remark 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. Accordingly, Treitz (1988) remarked that technical progress in the agricultural sector in all region of the world is made possible through chance discoveries, experience and applied research and by evaluation of the results of basic research and the transfer into practice of new technologies.

In a study conducted by Deretchin, Yeoma and Seidel (1998) on students' information resources utilization in a problem based learning a comparison were made on the use of print, electronic , human resources and physical evidence as sources of information. The study concludes on the fact that students' use of electronic information is on the increase "… resource use habit of students appears to be moving away from predominant reliance on printed material" They 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 has had a great influence on the quality of students' engagement such as

term paper, projects, thesis, dissertation etc. In a related study, Salisbury (2003) reported from a survey on the topic Usability of E. Journals and Preference for the Virtual Periodical Room using Mathematical faculty and graduate students stated that if only one format was available the majority of the faculty and the graduate students identified electronic access as the preferred option.

Agricultural extension services serves as a link between scientific research and the end user of research results. The users of agricultural results are person(s) engaged in crop or animal husbandry. According to Ban Van Den and Hawkins (1993) an innovation is an idea, method or object, which is regarded, as new by an individual but which is not always the result of recent research. It has always been an expectation on the part of the researcher and extension worker that the end user adopts research findings. Thus, interviews are conducted with the potential users of innovation as a basis of diffusion studies. However, a user is charged with the final decision as to accept or reject proposed changes after putting into thoughtful consideration his own situation and value system. Utilization and application of innovation therefore provides to some extent a suitable basis for the researcher and extension worker to solve the problems confronting the farmers. A study conducted by Fadeji (2000) on Sources and Utilization of Extension Information among farmers of improved maize in two villages of Kaduna state with focus on other medium of information transfer such as personal contacts, radio and print among farmers reveals that 61.6% frequently use information from extension services and 38.4% occasionally use extension information on improved maize hybrid. Also from the results of a study conducted by Omatayo, Chikwendu and Adebayo (2001) 60% adoption rates were recorded on improved varieties of cassava, 75% adopted

fertilizer technology in sorghum and 50% maize variety respectively. This shows the extent to which farmers through extension services are utilizing information.

2.6 Impact of Electronic Information Databases on Agricultural Research

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;

1) The amount of time spent searching the literature is greatly reduced. An experienced database searcher can formulate a search strategy circumscribing his information needs and the interaction with a database may be completed over the terminal within a few minutes, depending on the complexity of the search. In the conduct of the search, a user will be able to cover the entire contents of a data-base on a subject or subjects which may contain thousands of citations and abstracts; and then switch to an alternative base or bases on the same system.
2) The search results are presented in a concise and standardized format whose detail can be pre-determine 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.
3) 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 center in itself (be it a library building or not) giving

access to the million of citations in the databases to which it is connected through communication networks.

4) Electronic database access makes it possible for the library and information center to serve more users (if located within a library building). The amount of time spent searching the literature is drastically reduced, as indicated previously the drudgery is taken out of searching. The staff time saved can be used to process more searches.

5) Searching electronic databases usually gives the searcher access to the most current citation easier then when searching manually. Most databases allow a user to search according to the year the citation is added.

6) Cogswell (1978) indicated that an electronic database provides a more personalized services typically resulting in a bibliography uniquely tailored to a particular individuals information need.

2.7 **Constraints on the use of Electronic Information Sources**.

In spite of the enormous potential in the use of electronic information sources, users still have some difficulties to contend with. The following are some of the findings identified by Ochs (2005b); language barrier, inadequate infrastructure (computers, electricity, paper, toner cartridge etc), high cost of printing of articles, limited access (Library hours). In the case where Internet facilities are made available, some users find the Internet slow and expensive. The major constraint identified by Oduwole and Akpati (2003) is insufficient terminals to cope with the high demand for access, closely followed by power outages.

2.8 **Summary of the Review**

From the review, relevance of information for scientific and technological advancement was highlighted. The role electronic databases is playing in bringing about research excellence in this part of the globe is also discussed.

The studies reviewed are similar to the present study. They explore the use and access to wide range of electronic information sources very similar to this study. The relevance of electronic information for research in agriculture Complex of ABU is the concern of the present study. It must be noted that most of the work reviewed in this study emanate from developed counties that are more advanced in the rate of adoption and use of these information sources. However, attempt was made to bring to light current effort aimed at access to electronic information by users from the developing countries. It is therefore, hoped that the result of this study will both enhanced the use and facilitates access to electronic information databases where such does not exist.

References

Adams, J.A and Bonk, S.C (1995) Electronic Information technology and Resources: use by University Faculty and Faculty preference for related Library services. College and Research Libraries 6 pp.119-131

AFRICAN JOURNALS ONLINE. Retrieved 1st February, 2006 from http://www.ajol.info/

AGORA- Retrieved 1st June, 2006 from http://www/ncbi.nlm.nih.gov/entrez/query.fcgi

AGRICOLA - Retrieved 1st June, 2006 from http://agricola.nal.usda.gov

AGRIS- Retrieved 1st June, 2006 from http://www.fao.org/org/orgris/

Ahenkorah – Marfar, Micheal (online resources) Recent rends in electronic Information delivery at the Kwame Nkrumah University of Science and technology Library. *Journal of interlibrary loan Document Delivery and Electronic Reserves* Vol. 16 issue 3.

Amune, S.A (1983) The Provision and Utilization of non-book materials in selected Nigerian University Libraries. Unpublished MLS Thesis. Ahmadu Bello University Zaria, Nigeria.

Anyanwu, A.C. (1999) computer use in agriculture: Potentials in Nigeria in the 21st century.Agricultural Extension Research and development in Nigeria (Proceedings of the fifth Annual National Conference o the Agricultural Extension Society of Nigeria (12th-14th April 1999 pp89-92.

Ban, Vana den A.W. and Hawkins, H.S. (1993). Agricultural Extension, Modified Edition reprint In Fadiji, Taiye Oduntan (2000) sources and utilization of Extension Information among farmers of improved maize in two villages of Kaduna. Unpublished M.Sc thesis pp.14-1.

BIOMED CENTRAL Retrieved 1st June, 2005 from http://www.biomedcentral.com

Blajan, I (1979). The system for veterinary Information at the national and world-wide levels. Bull. Off int. Epz 21. 91 (11-12) pp. 795-821.

Blajan I and Welte V.R (1988) Information, a prerequisite for veterinary activities Rev. Sci. Tech. off. Int. Epiz 7(3) 463-478.

BMJ Publishing Group http://bmjjournals.com/subscriptions/countries.shtlml
Burch, John G. (1996). Information Systems: Theory and practice John

Wiley and Sons New York pp. 3-6.

Burns, Alan (ed) 1984. New Information. Elis Horwood England pp. 22.

CAB Abstracts – (AGORA Interface) – Retrieved 1st June, 2005 from http://www.agora.cabi.org/

Crawford, R. (1990). CD-ROM is Australia Capital Libraries LASIE 21, 72-82

Davies Roy, (1986). Intelligent Information Systems: Progress and prospect. Ellis Hirwood Ltd – Chichester. pp. 209.

Deretchin, Lousise F.,. Lynn C. Yeoman, Charless L. Seidel (1988). Students Information Resource Utilization in problem – Based learning. Med. Edu. On-line (Serial on-line) 1998 4:7. Retrieved from 13th May, 2006 from http://www.utmb.edu/meo/

Dictionary of behaviour Science Edited by Benjamin B. Wolman et al(Eds) 1975. MacMillan Press, London. pp. 193.

Directory of Open Access Journals. Retrieved 19 August, 2006 from http://www.doaj.org/

Fadiji, Taiye Oduntan (2000). Sources and Utilization of Extension Information among farmers of improved maize in two villages of Kaduna. Unpublished M.Sc Thesis. Ahamdu Bello University Zaria Nigeria pp 18.

Frank, Susan (1996). Reviewing the literature: use of library and Information systems. *In:* Research Methods: Guidance for postgraduate Greenfield Tony (Ed). John Wiley and sons New York P.51

Goivannetti, J.F. and Meissonnier (1987). Sources of Information in the fields of animal production and animal health. II secondary Information, data bases and data banks Rev. Sci. Tech. Off. Int. Epiz 6(1) 27-39

Gray, D.E. (1976). Veterinary Information:The current Situation and Future trends. The veterinary Records April 3 1976. pp 271.

Hall, Sherwin A. (1978). Farm Animal Disease Data banks. Advances inVeterinary Science and Comparative Medicine Vol. 22 P. 277-2778.

HINARI - Retrieved 1st June, 2006 from http://www.health internet work.org//

Houghton Bernard and Convey John (1977). On-line Information Retrieval System Redwood Burn. U.K 1977 pp.43-44.

Jenson, M. Richardson, D. (1998). Wireless weaves to lesson that gaps in rural telecommunication coverage in Africa In Richardson, D., Paisley L. (Eds). The first mile of connectivity. Advancing Telecommunications for rural development through a participatory communication Approach. FAO, Rome, Italy.

Kapange, Barnabas. ICTs and National Agricultural Research System – The case of Tanzania. and national agricultural research system. PDF. Retrieved 24th July, 2006 from http://www.tzenline.org/pdf/ICEs

Kiondo, E. (1997). "The challenge of CD-ROM and document delivery at the University of Dar es Salaam Library, Tanzania" African *Journal of Library, Achieves and Information Sciences* Vol. 14 No. 1&2 C.B. (2003)

Line, M.B (1974) Information and Library needs, wants and uses. ASLIB Proceeding 26(2) pp87

Malina, K A (1989) Seminar on establishment of a National Information and Documentation Network in Tanzania, Dar es Salaam. February, 16-24, pp5-6

Mosuro, T. (1996). CD-ROM technology and its application at Kenneth Dike Library, University of Ibadan. *Nigeria Library and Information Science Review* Vol.14 no. 1 pp.46-50

Nielsen, J.M. (1985). Searching the veterinary literature via computer. JAVMA, Vol.186 No.10, May 15, pp.1060.

Nelson, N.M. (1990). CD-ROM in European libraries Part 1 CD-ROM librarian Vol. 5 pp26-28.

Nicholas, P., Majid, S. (1989). "The potential of CD-Rom Technology in less developed countries. *Canadian Library Journal* Vol. 46 No 4 pp 257-63.

Ochs, Mary (2005). TEEAL (The Essential Electronic Agricultural Library): A user study Report to Rockefeller Foundation. January, 2005 pp.1-22.

Omotayo, Kin; Okey D; Chikwendu and Kola Adebayo (2001). Two decades of World Bank assisted extension services in Nigeria: lessons and challenges for the future. J. Agri. Edu & Exten. (3) pp143-152.

Ojedokun, Ayoku A. (2001) Internet Access and Usage by Students of the University of Botswana. African Journal of Library and Information science. Vol 11 (2) pp97-107

PubMed- Retrieved 1st July, 2006 form http://www.ncbi.nlm.nih.gov/entre2/query.fcgi.

Richardson, D. (1997). The internet and rural development opportunities for Forestry. *Unasylva* (English ed.) 1997. 48 (189) 3-9.

Risopoulous, S. (1988) Agriculture research and agricultural development. Agricultural in the year 2000: The case for ACP countries. International Forum Athens, November 1988 pp.78.

Roberts, Norman(1975) Draft definition, wants, demands and use: A comment. ASLIB Proceeding 27(7) pp307-313

Salisbury, Lutishoor (2003). Usability of E. Journal and preference for the Virtual periodicals Room: a survey of mathematic Faculty and Graduate Students *Electronic Journal of Academic and Special Librarianship* Vol.4 no 2-3 (fall 2003).

SciELO– Retrieved 1st June, 2006 from www.scielo.org/

Shika, S.I (1987) A study of social science collection in Kashim Ibrahim Library. ABU Zaria. Unpublished MLS Thesis. Ahmadu Bello University Zaria, Nigeria.

Solange, G.F. (1995). "CD-ROM technology in Libraries and Information Units in developing countries" African Journal of Library, Archieves and Information Science Vol.5 No.1 *In* Oduwosle A.A. and Akpati, C.B. (2003) Accessibility and Retrieval of Electronic Information at the University of Agriculture Library Abeokuta, Nigeria L*ibrary review* Vol.52 no 5 pp228-233.

Tiamiyu M.A (1999) World Wide Web/ Internet and information services in Nigeria in the new millennium. Paper delivered at Nigerian library Association, Abeokuta, Ogun State.

Tommey, and Burton, P.F (1998) A study of the Usage and Attitude among academic . Journal of Information science 24 (6) pp.419-429

Treitz, Warner (1988) Transfer of agricultural technologies through dissemination of technical and scientific information. Agriculture in the year 2000: The case for ACP countries – proceeding pp. 75

Veterinary Science CD- Retrieved 2nd September, 2006 from http://www.ovid.com/site/catalog/DataBase/161.jsp

Warnasuriya, Dilmani (2001) Interchange and exchange of scientific information among S & T information centres/Libraries of the South Asia Region 29 – 30.

Wright S. (1990) Application of CD-ROM technology in developing countries program 24, 129-140.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research method to be adopted for the study. The outline of the chapter is provided below:

Research method adopted for the study

Population of the study

Sample and sampling procedure

Instrument for data collection

Procedure for validation of the instrument

Procedure for data collection

Procedure for data analysis.

3.2 Research methodology adopted for the study

The study employed a survey research method. A survey research according to Kerlinger (1973); Akuezuilo, (1993) and Aborisade, (1997) study large and small population or universe by selecting and studying samples selected from the population to discovered the relative incidence, distribution and interaction of sociological and physiological variables. The survey method is adopted because the researcher is mainly interested in describing certain variables in relation to the population. Since the researcher is concerned with people's opinions about access and use of electronic

information databases for performing their responsibilities, this method is seen to be more appropriate than other research methods used for descriptive studies.

3.3 Population of the study

The population of the study is the Agricultural Complex of Ahmadu Bello University, Zaria. The choice of these populations made up of three Agricultural Research Institutes and two Faculties namely; Faculty of Agriculture, Faculty of Veterinary Medicine and Human Health, Institute for Agricultural Research (IAR), National Animal Production Research Institute (NAPRI) and National Agricultural Extension and Research Liaison Services (NAERLS) is first informed by the researchers' observation of a high concentration of agricultural activities and also the availability of a number of electronic information databases on agriculture in use. The researcher collected responses from researchers and lecturers in the Agricultural Complex of ABU Zaria. The choice of these population groups is based on the fact that they are supposed to be involved in productive research, which results into publications, lecture notes etc and might required the use of information system. In addition, they form the major group who are likely to provide the information required for the study. Records from the Ahmadu Bello University Registry showed that there are 174 lecturers and 148 Researchers within the Agricultural Complex. The tabulation is presented on table 3.1.

Table 3.1 Population of study

Institutions	Lecturers	Researchers	Total
Fac. Of Agri	88		88
Fac of Vet Med	86		86
N A E R L S		42	42
I A R		64	64
N A P R I		42	42
Total	174	148	322

3.4 Samples and Sampling Procedure

Rossi (1983) and Hernon (1994) recognized that the determination of sample size is a major problem for researchers. They postulated a theory that a research should seek the empirical approach that uses sample sizes as a way of solving the problem. A proportional stratified sampling technique was employed for drawing up the sample size. This is because the population has different strata and the techniques involved in selecting units proportional to each stratum. According to Akuezuilo (1990) and Abah (1982) stratified selection ensures that variables that are inherent in the subjects are evenly distributed. The selection therefore embraces the different designations among the Lecturers and Researchers such as from lecturer II and Research fellow II etc. Two hundred and nine (209) (65%) was selected with fairly equal representation from different strata for the study. The number is found adequate because it is sufficiently large enough to be a representative of the study population.

3.5 Instruments for Data Collection

The researcher used questionnaire and documentary evidence for data collection:

3.5.1 Questionnaire

A structured questionnaire was administered to the respondents for the purpose of data collection. The questionnaire was divided into sections A-G. Section A solicited for personal background information of the respondents. Sections B-G contains items that sought for data to answer the six (6) research question. Likert rating 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 is based on the following reasons; first, that the respondents are literate and capable of completing the questionnaire without further assistant from the researcher. Secondly, the questionnaire method enjoys prominence in educational research. According to Nworgu (1991) questionnaire is by far the most frequently used instrument in educational research. Its popularity is demonstrated by the number of published studies and students projects in education that employ this instrument for data collection.

3.5.2 Documentary Evidence

These consist of records by Institutions, Organization or Individual, which may be available for research purpose. One very important use of such records as suggested by Kerlinger (1973) is that it can be used to check the result of data obtained by one or

more other method. The research is adopting this method to compliment the questionnaire method.

3.6 Validation of the Instruments

In order to ensure that the questionnaire is capable of eliciting the required information from the respondents, the instrument was subjected to face validation. This means that the draft instrument was made available to experts to peruse and raise necessary observations, corrections and amendment to strengthen the instrument. The decision by the researcher to adopt face validation is base on the remark by Kerlinger (1973) that Validation by others is an effective method for content validation of research instrument.

3.7 Procedure for Data Collection

During the process of administering the instrument, the researcher was personally involved and assisted by some staff of the Research Institutes and Faculties. The researcher and assistants administered the questionnaires hand to hand. Each respondent is made to understand the purpose of the excise and given enough time to complete the questionnaire. The researcher calls back after a few days to collect them.

3.8 Procedure for Data Analysis

The study made use of descriptive statistic for presentation and analysis of data. The analysis was done descriptively using tables, frequency distributions and percentages.

Reference:

Abah, C.O (1982). The Nature of Science and Science Education: Some Current trends. Journal of the Science Teachers Association of Nigeria. 20 (2) pp.108-114

Akuezuilo, E.O (1993) Research Methodology and Statistics 2nd ed. Nuel Centi Adda, Nigeria pp.8-9

Best, J.W (1981) Research in Education. 4th ed. Englewood; Prenice-Hall

Hernon, Peter(1994) Determinant of sample size and selection of the sample concept , general source and softwares. College and Research Libraries. 55 (2) pp171

Kerlinger, Fred N (1973) Foundation for behavioral Research. 2nd ed. New York pp127

Rossi, Peter H et.al (1983) Handbook of Survey Research. Orlando: Academic Press pp180

CHAPTER FOUR

DATA PRESENTATION AND DICUSSION

4.0 Introduction

This chapter deals with the data presentation, analysis and interpretation. It provides a comprehensive description of the characteristics of the respondents in the agricultural complex. The data generated from the questionnaire were presented in a frequency tables and percentages, the research questions generated for the study form the bases for the sub-topics.

4.1 Response Rate

Out of the 209 respondents that were administered with questionnaires, 147(70%) respondents duly completed and returned the questionnaires. The break down shows that, 80(54%) were lecturers from the Faculties of Agriculture and Veterinary Medicine and 67(46%) were researchers from IAR, NAERLS and NAPRI. 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. Some faculty and research institute staff also helped in the administration and collection of the questionnaires from the respondents. The cooperation received from Library staff from the faculties and research institutes also helped.

4.1.1 Status of the Respondents

The professional status of the respondents who participated in the study is presented in Table 4.1.

Table 4.1 Distribution of the respondents by status

STATUS	NO OF RESPONDENTS	PERCENTAGE
Asst. Lecturer	17	11.5
Lecturer II / Research Fellow II	29	19.7
Lecturer I / Research Fellow I / Extension Specialist I	34	23.1
Senior Lecturer / Senior Research Fellow / Senior Extension Specialist	45	30.6
Principal Research Fellow	9	6.1
Reader	7	5.0
Professor	6	4.0
Total	147	100%

Table 4.1 gives a good picture of the respondents in study. From the table it was discovered that majority 45(30.6%) of the respondents are in the Senior Lecturer, Senior Extension and Senior Research Fellow cadre. Collectively, the respondents cut across all the strata in the agricultural complex. All the participants are actively involved in teaching and research activities.

4.2 Data Analysis

This section present the analysis and discussion of the data collected for the study. Effort was made to answer all the research questions raised in the study. Descriptive statistic was used to analyzed and discuss the research questions. The first research question

seeks to find out the different databases that are available in the Agricultural Complex. Below is the findings and discussion.

4.2.1 Electronic information Databases Available in the Agricultural Complex of ABU, Zaria

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

Table 4.2: Online and CD-Rom database available in the Agricultural Complex of ABU Zaria

S/NO	On-line Databases	AGRICULTURE	VETERINARY	IAR	NAERLS	NAPRI
1	AGORA	√	√	√	√	X
2	CAB ABSTACRTS	√	√	√	√	X
3	MEDLINE	X	X	X	X	X
4	AGRIS	X	X	X	X	X
5	AGRICOLA	√	√	√	√	X
6	HINARI	X	√	X	X	X
7	PUBMED	√	√	√	√	X
8	HIGHWIRE	X	√	X	X	X
9	SCIELO	X	X	√	√	X
10	INSPERI	√	√	√	√	X
11	BIOMED CENTRAL	√	√	√	√	X
12	BMJ PUBLISHING	√	√	X	X	X
13	AFRICAN JOURNALS ONLINE	√	√	√	√	X
14	DIRECTORY OF OPEN ACCESS Journals	√	X	X	X	X
15	BIOSIS	X	X	X	X	X
16	OTHERS	√	X	√	X	X
CD-ROMs Databases						
17	TEEAL	√	√	√	√	X
18	CAB ABSTRACTS	√	√	√	√	X
19	MEDLINE	X	X	X	X	X
20	AGRIS	√	x	X	X	X
21	AGRICOLA	√	√	X	X	X
22	VET CD	√	√	X	X	√
23	BEAST CD	X	√	X	X	√
24	OTHERS	√	x	√	√	X

Key: √ = AVAILABLE, x = NOT AVAILABLE

From table 4.2, it is interesting to find out that all the libraries and information centers except NAPRI library subscribes 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 and information resource centers within the complex. The availability of these resources could be attributed to the current trends in information packaging and dissemination especially in the field of science. This position is confirmed by Watson (1999), Dennis and Espinoza (2000) who noted that internet and other forms of electronic resources are being made available in the university, for teaching, learning and research.

The analysis implies that information in the electronic format is complementing the printed format of information resources. This revelation supports Hype (1990) who stated that Libraries and information centers should have varieties of information resources…to support the institutional objectives and programmes. The implication of this findings is that there are a good number of electronic information databases available in the agricultural complex which may translate to quality teaching, research and learning.

However, the researcher observed a lack of internet services in one of the studied institutions. Perhaps the reason for this may not be unconnected with what Lee and Isa (2005) noted that even with the advert of internet and easy access to online and CD – Rom information, not all scientists have access to computers and internet services.

The electronic resources studied are available in different type of format i.e. full-text, citation/ abstract and citation only.

1. **Full text**

Full text articles are those where the complete articles are available (rather than just summaries or abstracts). Usually the whole of the journal articles or part is available online. Around 90% of Science Technology, Agriculture and Medicine journals are available online, but only around 50% of Humanities are.

Some electronic journals are a duplicate of the print version which is then made available electronically; others are *only* available in electronic format (and so allow features such as large data sets, or animation, or audio and video clips to be included).

2. **Citation and Abstracts**

Often when you access a collection of journals you will find that only the citations and possibly abstracts of the articles will be available to you. This may be because a user does not have a subscription to the full-text access rights, or possibly because there is a document delivery option, whereby a user can pay online to have the full-text of individual articles. Citation and abstracts can be useful for researchers who want to get a quick view of what material is available, what new has been published. Examples are: African Journals Online: www.ajol.info/ The Journal of Clinical Investigation: www.jci.org/content/vol112/issue**3**/index.shtml and Journal of the American Society for Information Science and Technology http://www.asis.org/Publications/JASIS/tocs.html

The result shows that users can obtain access to full-text, abstract or citation only to the electronic information resources studied. The result agrees with the findings of Ochs (2005), Hadebe (2005) on the use of AGORA and TEEAL databases respectively. 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 information databases in the agricultural complex such as Epnet, GEODERMA, SOIL SCIENCE SOCIETY OF AMERICAN JOURNAL (SSSAJ), JOURNAL OF ARID ENVIRONMENT (JAE), HUMANITY DEVELOPMENT (CD-ROM), VIDE DATABASE, WIKIPEDIA and AGRONOMY JOURNAL

4.2.2 Frequency of Use of Electronic Information In the Agricultural Complex, ABU Zaria

Information, no matter how well packaged, does no 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 was framed in time scale such as daily, weekly, monthly, annually and not at all. The result is presented in Table 4.3 and fig 1.

Table 4.3 **Frequency of Use of Electronic Information In the Agricultural Complex, ABU Zaria**

Response type	**No of respondent**	**Percentage**
Daily	16	12
Weekly	29	23
Monthly	54	43
Annually	11	9
Not at all	17	13
Total	127	100

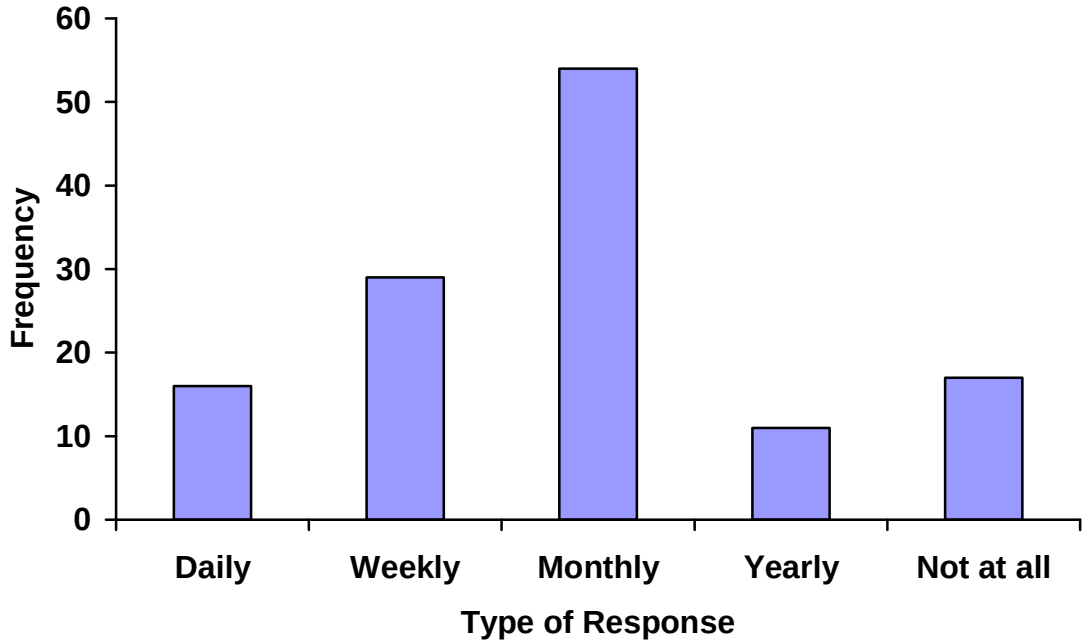


Fig. 1: Frequency of Use of Electronic Information in the Agricultural Complex, ABU Zaria

From the analysis of data presented in the Figure 1 and Table 4.3, it could be seen that 54(43%) of the respondents do use the electronic databases monthly, 29(23%) use the electronic database weekly while 16 (12%) use the electronic databases daily. 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. Collectively, 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 36.2% in 1998 to 53.9% in 2000. This shows 17.7% increases in the number of users. The result also supports Rusch-Feja and Siebeky

(1999) findings from a study on Evaluation of usage and acceptance of electronic journals. They revealed that e-journals were being used regularly (….weekly and monthly) despite the various disadvantages associated with the electronic format. Similarly, the findings support a study by Jagboro (2003) on the use of internet in Nigerian University. 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. 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.

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(88.1%) of them use the system without assistance. This corroborates the finding of Ramlogen 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 (70.7%) indicated in the affirmative, while 21 (14.4) indicated a no response.

4.2.3 Reasons for use of Electronic Information Database

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 lectures make of information from these databases resources. The researcher provided the respondents with seven ways in which such information obtained could be utilized. The respondents were requested to indicate their level of agreement on a five point Likert scale. Their mean responses and standard deviation have been computed and presented in Table 4.5. However, for easy computation, the analysis is presented using three (3) scales. Highly agreed and agreed have been merged so also disagreed and highly disagreed.

Table 4.4 **Reasons for the Use of Electronic Information Database by the Respondents**

S/No		Types of Response			Mean	SD
	Use of Electronic Information Database	Agreed (1)	Undecided (2)	Disagreed (3)		
1	Lecturing	109(74.8)	8 (5.4)	9(6.1)	1.763	.938
2	Laboratory/Field research	100(68.1)	10 (6.8)	10(6.8)	1.783	.971
3	Write Seminar/ Conference Paper	110(74.8)	6 (4.1)	9(6.1)	1.624	.930
4	Research Work	120(81.6)	5 (3.4)	6(4.6)	1.480	.807
5	Up date Knowledge	117(79.6)	4 (2.7)	8(5.4)	1.604	.851
6	Generate New Information	112(76.2)	5 (3.4)	9(6.1)	1.674	.936
7	Current awareness	114(77.5)	5 (3.4)	5(3.4)	1.604	.752

The finding revealed by the table above is the quest for information by the researchers and lecturers in the Agricultural complex for research which accounts for 120 (81.6%). Closely following this is their zeal to be current in their field, 117(79.6%) The data obtained confirms the high value researchers and lecturers placed on access to current scientific literature for their research work. The fact that electronic resources were used heavily for research and to Update Knowledge might support the findings of a study conducted by Tenopir (2003). It was revealed that the heaviest use of electronic resources is for research, followed by teaching and gaining current awareness. The report also agrees with that of Bronthron et al (2003), Hadebe (2005), Patitungkho and Deshpande (2005) that among those who used electronic journals regularly were used for current awareness, writing and presenting seminar/conference papers and keeping up to date knowledge.

Similarly, the findings of Herron (1998) and Osuala (2000) stated that, internet facilities are used to obtained important resources for teaching and learning. Due to high cost of books and subscription-based journals, only few individuals can afford to subscribe to journals while the majority relies on the libraries for needed information. Unfortunately, agricultural libraries in Nigeria have not been able to meet the needs of most of its users due to shortage of funds. This development has resulted in researchers and lecturers 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 lecturers 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.

4.2.4 Usefulness of Electronic Information Databases

Attempt was made to identify the usefulness of electronic information databases in the Agricultural complex 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 usefulness. The data collected from the respondents is tabulated in table 4.6.

Table 4.5 **Usefulness of electronic information databases to researchers and lecturers**

Usefulness of electronic information databases	Types of Response			Mean	SD
	Agreed (1)	Undecided (2)	Disagreed (3)		
Using electronic information reduces the time spent in using printed information sources	110 (74.8)	8 (5.4)	11(7.5)	1.728	1.013
The quantity and quality of publication have improved tremendously as a result of Electronic resources	113 (76.9)	10 (6.8)	5(3.4)	1.632	849
Electronic Resources has become the most important information sources for research	97 (66)	17 (11.6)	11(7.4)	1.880	1.028
The use of electronic resources helps by providing orientation on a new topic such as starting a new research topic	112 (76.2)	14 (9.5)	7(4.8)	1.804	.882
Eliminates the problem of geographic location in the transfer of information	113(76.9)	12 (8.2)	6 (4.6)	1.618	.940
The output of a database search is tailor – made based on the search term used.	94(64)	26 (17.7)	5 (3.4)	1.992	928

Usefulness is one of the crucial measures of how appropriate information resources or services are for a defined user group. An appropriate information resources or services should be able to provide relevant and organized information to meet the specific needs of enquiries for the advancement of research and learning. Electronic databases allow users to search exactly on the criteria they are interested in; it can also import large information from another database in a network in one operation in a short time. From the analysis, 113(76.9%) respondents agreed that the most usefulness of electronic information is the improvement in the quantity and quality of publication, as well as eliminating the problems of geographical location in the transfer of information. Closely following these, 112 (76.2) respondents indicated that the use of electronic resources helps by providing orientation on a new topic such as starting a new research topic. Another important usefulness of electronic information databases as indicated by 110(74.8%) respondents is the fact that it reduces the time spends in using printed information resources. The findings support the report of Houghton and Convey (1977) that the electronic resources reduces the time spent in using printed information sources and elimination of the problem of geographic location in the transfer of information.

Other benefits highlighted by Ray and Day (1998) are that the information is obtained when it is wanted; 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 information databases among researchers and lecturers in the Agricultural Complex has far-reaching benefits. It is being use to support research, teaching and learning.

4.2.5 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 complex. The responses is captured and presented in table 4.7and figure 2.

Table 4.6 **Level of Satisfaction with electronic information database**

Level of satisfaction with electronic information databases	No of respondent	Percentage
Highly Satisfied	92	78.6
Satisfied	16	13.7
Not Satisfied	9	7.7
Total	117	100

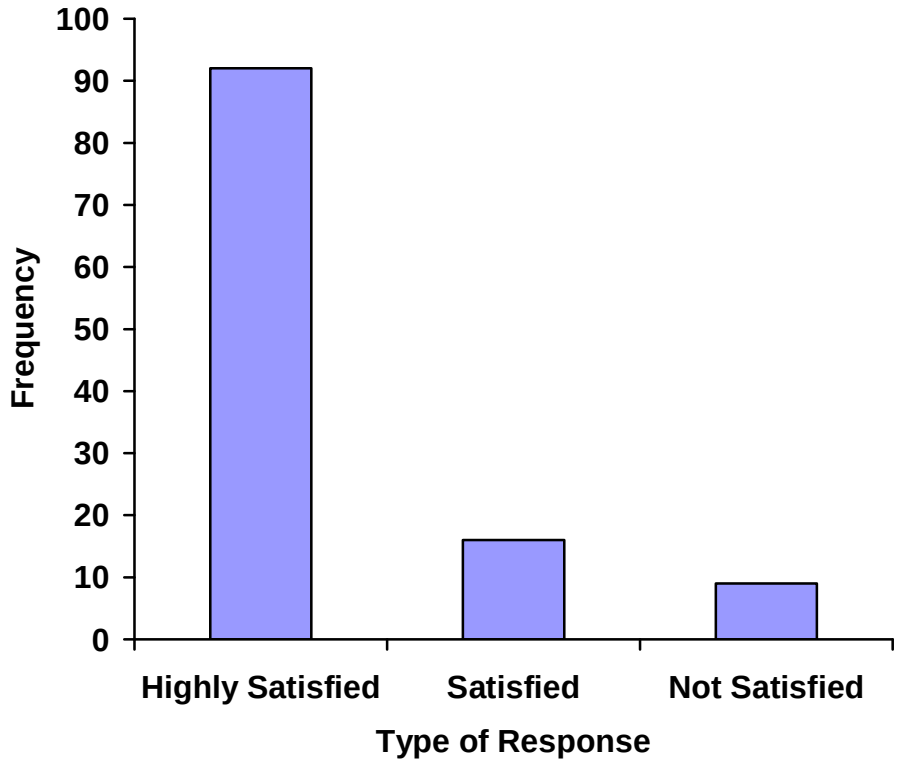


Fig. 2: Level of Satisfaction with electronic information database

The above findings as presented in table 4. 7 and fig.2 show that 92(62.8%) are satisfied with electronic resources. This shows quite a good level of satisfaction in the services offered. This supports the report by Rowlands (2007) that e-journals and databases are widely accepted across the academy; more than three quarter of faculty use them regularly and reported high levels of satisfaction. Brouphy, et al (2004) also in the EDNER research report on a different target group found that users are frequently satisfied with any resources coming close to meeting an expressed need. This result implies that libraries in the Agricultural Complex should continue to acquire electronic information databases for the benefits of the users.

In a related issue, the study tried to find out the preference for type of information sources by the respondents. This is in line with Schaffer (2004) who opined that every library and information manager have to decide which format (print or electronic) to acquire for a defined user group. The exercise would help librarian and information managers in the Agricultural Complex determine users' preference and respond to them accordingly within available resources. The responses captured are presented in table 4.8.

Table 4.7 **Type of sources preferred by respondents**

FORMAT OF SOURCES PREFERRED	NO OF RESPONDENTS	PERCENTAGE
Electronic	47	36
Print	12	9
Both	71	55
Total	130	100

From the analysis above, it is clear that 71 (55%) of respondents preferred a coexistence of both print and electronic sources of information. Researchers and lecturers seem to expect a hybrid of print and electronic resources. They desire to meet their information needs through a mixture of print and online resources, an indication that libraries should develop print and as well as electronic resources simultaneously. From a study conducted by Siebenberg, Galbrait and Brady (2004), it was reported that 68 (52%) preferred print and electronic subscription by the library. According to the report electronic access provide a greater visibility to print resources. Electronic databases make it easier

to find older articles not yet online in full text and to find references to print –only articles from libraries. Similarly, this corroborates the findings of Lui (2006) that 120 (83%) of graduate students seem to expect a hybrid of information sources through the mixture of print and online resources.

4.2.6 Factors affecting the provision of electronic Information resources in the Agricultural Complex.

One of the objectives of this research is to identify factors that are militating against the provision and use of agricultural information databases by researcher and lecturers in the agricultural complex. The response is presented in table 4.9.

Table 4.8 **Factors affecting the provision of Electronic information resources in the Agricultural Complex**

S/No.	Factor affecting the provision of Electronic information resources	Agreed (1)	Undecided (2)	Disagreed (3)
1	Slow Internet Service	108 (73.5)	12 (8.2)	15 (10.2)
2	High cost of printing of document	90 (61.3)	14 (9.5)	32 (21.8)
3	Insufficient computers	106 (72.1)	15 (10.5)	15 (10.2)
4	Power outages	111 (75.5)	7 (4.8)	16 (12.9)
5	Poor quality print out	45 (30.6)	41(27.9)	49 (32.0)
6	Lack of communicating and promoting to users by librarians	70 (47.6)	40(27.2)	23 (15.7)
7	Low level in computer literacy	90 (61.2)	26(17.7)	21 (14.3)
8	Lack of access to current up-to-date information	11 (7.5)	8 (5.4)	110(74.8)
9	Irrelevant information	5 (3.4)	10(6.8)	113(76.8)
10	No access to full text of citation/Abstracts	17 (11.6)	11(7.4)	97 (66.0)

From table 4.9 above it could be seen that many factors are affecting the provision of electronic information services. The table shows that Power outages which accounted for 111 (75.5) of the respondents is a major factor affecting the provision of electronic information resources. Another factor as indicated by 108 (73.5%) respondents is slow internet services and 106 (72.1%) respondents indicated insufficient computers. The prevalence of these factors has also been reported in similar studies such as Liewellyn (2002), Ali-Dinor (2002) Bonthron et al (2003) and Jagboro (2003). It was discovered that progress in the provision and use of Electronic information sources in academic sector has been significantly slowed down. The result also falls in line with those of Lee and Isa (2001) who reported from a related study on accessing and sharing research information that the pressing factors hindering maximum utilization of these facilities include lack of adequate internet facilities, use of password to access some journals.

The implication is that these problems have constituted a hindrance to maximum utilization of electronic information resources by researchers and lecturers in the complex. If these are allowed to persist, there will be low patronage by the users of these resources. This will bring about an economic and educational setback to the university.

REFERENCES

Brabazan T (2001). Internet teaching and the administration of knowledge first Monday, 6(6) Retrieved 4th February, 2007 http://www.firstmonday.org/issue6_6Ibrabazon

Hadebe, Zanele (2005) E-resources and University libraries: a case study of AGORA databases at the University of Zimbabwe Retrieved 4th February, 2007 www.itoca.org/2%20Hadebe%20paper.pdf. Pp2.

Jagboro, K.O. (2003). A study of internet usage in Nigerian Universities: A case of Obafemi Awolowo University Ile-Ife, Nigerian Retrieved 4th February, 2007 www.firstmonday.org/

Lec, Su-Sec and Isa Mohamad Zaki (2005). Accessing and sharing Research Information in the ASEAN Region: Malaysia's perspective. Pp 5

Lui, Ziming (2006) Print vs Electronic resources: a study of user perception, preference and use. Information processing and management: an international journal 42 (2) Pp 583-592

Patitungkho, Kingkaew and Deshpande, Neela J. (2005). Information seeking behaviour of faculty member of Rajabhat University of Bangkok. Webology, 2 (4) Dec. pp10.

Ramlogand, Rabia and Lucy A. Tedd (2005). Use and non use of electronic inforn=mation by undergraduates at the University of West indies. Retrieved 4th March, 2007 http://cadir.aber.ac.uk/dspace/bitstream/2160/171/1/oirpaperfin.doc. pp1

Rowlands, Ian (2007) Electronic journals and user behaviour: A review of recent research. Library and Information Science research. Pp 1-28 *In Press*

Rowley, J. *et al* (2002). User behaviour in relation to Electronic information services within the UK higher education community. Journal of Education / Media 27 (3) pp107-122.

Ruddy, Karen (1999). Hand it to then on a Silver platter: Meeting researchers needs in the electronic age. Retrieved 4th March, 2007 http://www.osti.go/infrum99/papers/ruddy.pdf.

Rusch-fejo D and Siebeky U (1999). Evaluation of usage and acceptance of electronic journals: results of an electronic survey of Max Planck Society researchers. D-lib magazine 5 (10), online. Retrieved 4th March, 2007 www.doi:10.1045/october99-rush-feja

Siebenberg, Galbrait and Brady (2004), Print versus electronic journal use- three Sci/Tec discipline: Whats going on here? Retrieved 4th March, 2007 www.ala.org/ala/acr/acrlpubs/crljournal/cr/2004/cr/september/siebenberg.pdf

Tenopir,Carol (2003) Use and users of Elecronic Library resources: An overview and analysis of Recent Research Studies. Retrieved 4th March, 2007 http://www.dir.org/PUBS/reports/pub120.pdf

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.0 Introduction

This chapter contains the summary of the study and major findings. Conclusion was drawn and some recommendations put forward.

5.1 Summary of the Study

The study focuses on availability and utilization of electronic information databases in the agricultural complex of ABU Zaria. It is based on the fact that researchers and lecturers require electronic information service provision to keep up to date with modern methods of research and teaching and that these sources of information are available for use by these categories of users.

To achieve the objectives of the study, six research questions and two hypotheses were formulated. The population of the study is made up of the agricultural research based faculties and institute in ABU Zaria. The subjects of study were the researchers and lecturers.

A survey method was used for the study. Stratified sampling method was used to select 209 respondents to accommodate the different strata of the subjects involved in the study. The instruments used to generate the data needed to answer the research questions hypotheses were the questionnaire and documentary records. The questionnaires that were returned were analyzed using the Statistical Package for the Social Sciences (SPSS). The first part of the

analysis was done descriptively using tables, frequency distributions and percentages.

5.2 Summary of the Findings

The following are the major findings arising from the study:

1 The study revealed that all the libraries and information centers subscribe to various online databases and all have 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 CAB Abstracts, TEEAL and AGRICOLA are commonly available in almost all the libraries and information resource centers within the complex. The availability of these resources could be attributed to the current trends in information packaging and dissemination especially in the field of science.

2 The study also found that that 54(43%) of the respondents do use the electronic databases monthly while 29(23%) use the electronic database weekly. The access points for these resources are the faculty and research libraries, Internet cafes', Information resource centers within the complex.

3 In the area of use of electronic information databases, it was found that 120 (81.6%) of the respondent use the electronic resources for research. This is closely followed by their zeal to be current in their field which accounted for 117(79.6%) The data obtained confirms the high value

researchers and lecturers placed on access to current scientific literature for their research work.

4 On usefulness of electronic information databases the study found that 113(76.9%) respondents agreed that the most usefulness of electronic information is the improvement in the quantity and quality of publication, as well as eliminating the problems of geographical location in the transfer of information. 112 (76.2) respondents indicated that the use of electronic resources helps by providing orientation on a new topic such as starting a new research topic. Another important usefulness of electronic information databases as indicated by 110(74.8%) respondents is the fact that it reduces the time spends in using printed information resources.

5 With reference to satisfaction with the provision of electronic information services, the study revealed that 92(62.8%) of the respondents are satisfied with electronic resources. The researchers and lecturers derived high satisfaction on the available resources, which provide current and up to date information to meet their information needs.

6 On factors that affect the provision and access to electronic information among the lecturers and researchers, the study revealed that 108(73.5%) respondents agreed that slow and expensive Internet service is a major factor affecting the provision of electronic information resources. Another factor as indicated by 106 (72.1%) respondents is insufficient computers. Other problems include power outages.

5.3 Conclusion

In view of the findings of the study, it could be concluded that the provision of electronic information will continue to have a great impact on research and training in the Agricultural Complex.

Libraries will attract greater patronage when high quality collections on both print and electronic are made available. Thus, the role of librarians and information service personnel is being challenged to increase information sources to facilitate access to information.

5.4 Recommendations

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

1 In view of the huge academic and research resources available through this medium and its usefulness to learning, teaching and research, it would be necessary for the libraries in the complex to facilitate access through networking. This is one of the effective means of accessing sharing research information and will enhance collection development efforts and further encourage the libraries to provide more and varied electronic resources.

2 Greater publicity also needs to be given to the many and varied sources of research information available, especially those that are available at no cost, so that more researchers become aware and make use of them

5.5 Suggestion for further Studies

This research focuses on accessibility and utilization of electronic information databases in the agricultural complex of ABU Zaria. In the course of the research, the following areas were brought to light which are not within the scope of this present study. Further studies need to be conducted in the following areas

I. Evaluating the performance of Access to Global Online Research in Agriculture (AGORA) and The Health Internet-work Access to Research Initiative (HINARI)

II. Compare and contrast the use of electronic and print resources

BIBLIOGRAPY

Abah, C.O (1982). The Nature of Science and Science Education: Some Current trends. Journal of the Science Teachers Association of Nigeria. 20 (2) 108-114

Adams, J.A and Bonk, S.C (1995) Electronic Information technology and Resources: use by University Faculty and Faculty preference for related Library services. College and Research Libraries 6 pp119-131

Ado, S.G (2006). Available Postgraduate Research Opportunities at the Institute for Agricultural Research, Samaru. ABU Postgraduate School Lecture Series. pp2

AFRICAN JOURNALS ONLINE Retrieved 1st June, 2006 from http://www.ajol.info/

Agbobu Chris (2002). "Sustainable development through agriculture: Current state of agriculture in Nigeria and recent government effort to improve the sector". Sustainable development through agriculture by Ogbera Felix (ed) pp. 30.

AGORA- Retrieved 1st June, 2006 from http://www/ncbi.nlm.nih.gov/entrez/query.fcgi

AGRICOLA - Retrieved 1st June, 2006 from http://agricola.nal.usda.gov

AGRIS- Retrieved 1st June, 2006 from http://www.fao.org/org/orgris/

Ahenkorah – Marfar, Micheal (online resources) Recent rends in electronic Information delivery at the Kwame Nkrumah University of Science and technology Library. *Journal of interlibrary loan Document Delivery and Electronic Reserves* Vol. 16 issue 3.

Ahmadu Bello University (1987) A history of Ahmadu Bello University, Zaria 1962-1987 A.B.U Press pg 172-174

Akuezuilo, E.O (1993) Research Methodology and Statistics 2nd ed. Nuel Centi Adda, Nigeria pp8-9

Amune, S.A (1983) The Provision and Utilization of non-book materials in selected Nigerian University Libraries. Unpublished MLS Thesis. Ahmadu Bello University Zaria, Nigeria.

Anyanwu, A.C. (1999) computer use in agriculture: Potentials in Nigeria in the 21st century.Agricultural Extension Research and development in Nigeria (Proceedings of the fifth Annual National Conference o the Agricultural Extension Society of Nigeria (12th-14th April 1999 pp89-92.

Arnon, Isaac (1987). Modernization of Agriculture in Developing countries: Resources, potential and problems. 2nd ed John Wiley ad Sons. Chichester. pp. 1-20.

Ban, Vana den A.W. and Hawkins, H.S. (1993). Agricultural Extension, Modified Edition reprint In Fadiji, Taiye Oduntan (2000) sources and utilization of Extension Information among farmers of improved maize in two villages of Kaduna. Unpublished M.Sc thesis pp.14-1.

Best, J.W (1981) Research in Education. 4th ed. Englewood; Prenice-Hall

BIOMED CENTRAL. Retrieved 1st June, 2006 from http://www.biomedcentral.com

Blajan, I (1979). The system for veterinary Information at the national and world-wide levels. Bull. Off int. Epz 21. 91 (11-12) pp. 795-821.

Blajan I and Welte V.R (1988) Information, a prerequisite for veterinary activities Rev. Sci. Tech. off. Int. Epiz 7(3) 463-478.

BMJ Publishing Group. Retrieved 1st June, 2006 from http://bmjjournals.com/subscriptions/countries.shtlml

Bose, L (1980). "Agricultural Information to hasten development". Proceedingps of the Sixth World congress of the International Association of Agricultural Librarians and Documentalists. Manila, March 3-7 1980 pp

Brabazan T (2001). Internet teaching and the administration of knowledge first Monday, 6(6) Retrieved 1st February from, 2007 http://www.firstmonday.org/issue6_6Ibrabazon

Bukar Shaib, Adamu Aliyu and J.S Bakshi (eds) (1997) Nigeria, National Agricultural Strategy Plan: 1990-2010. Edited by. African books ltd Ibadan pp71-116

Burch, John G. (1996). Information Systems: Theory and practice John Wiley and Sons New York pp. 3-6.

Burns, Alan (ed) 1984. New Information. Elis Horwood England pp. 22.

Day,T and Bartle,C (1989) The Internet as an Information service. Its impact on Academic staff in higher education. IRSS '98 Conference paper, Bristol, UK

CAB Abstracts – (AGORA Interface) –http://www.agora.cabi.org/

Chandler, G. (1976). "Proposed development of resource sharing network (UNISIST, NATIS, ALAIST)' *Information Library Review* Vol.10 No.2, pp. 179-86.

Consultative Group on International Agricultural Research (CGIAR) 2004 – 2005 (2005) Research and impact¨CGIARand Agricultural Biotechnology. Retrieved 31st June, 2006 http://www.cgiar.orga/impact/agribiotech.htm/ p.1

Crawford, R. (1990). CD-ROM is Australia Capital Libraries LASIE 21, 72-82

Davies Roy, (1986). Intelligent Information Systems: Progress and prospect. Ellis Hirwood Ltd – Chichester. pp. 209.

Deretchin, Lousise F., Lynn C. Yeoman, Charless L. Seidel (1988). "Students Information Resource Utilization in problem – Based learning". Med. Edu. On- line (Serial on-line) 1998 4:7 http://www.utmb.edu/meo/

Dictionary of behaviour Science Edited by Benjamin B. Wolman et al(Eds) 1975. MacMillan Press, London. pp. 193.

Directory of Open Access Journals Retrieved 31st June, 2006. http://www.doaj.org/

Fadiji, Taiye Oduntan (2000). Sources and Utilization of Extension Information among farmers of improved maize in two villages of Kaduna. Unpublished M.Sc Thesis. Ahamdu Bello University Zaria Nigeria pp 18.

Frank, Susan (1996). Reviewing the literature: use of library and Information systems. *In:* Research Methods: Guidance for postgraduate Greenfield Tony (Ed). John Wiley and sons New York P.51

Gepasin, D. (1990). What is research in the context of national agricultural research system? KRA Lecture ISNAR Wagenegin pp 16.

Goivannetti, J.F. and Meissonnier (1987). Sources of Information in the fields of animal production and animal health. II secondary Information, data bases and data banks Rev. Sci. Tech. Off. Int. Epiz 6(1) 27-39

Gray, D.E. (1976). Veterinary Information:The current Situation and Future trends. The veterinary Records April 3 1976. pp 271.

Hadebe, Zanele (2005) E-resources and University libraries: a case study of AGORA databases at the University of Zimbabwe Retrieved 1st February, 2007 from www.itoca.org/2%20Hadebe%20paper.pdf. Pp2.

Hall, Sherwin A. (1978). Farm Animal Disease Data banks. Advances inVeterinary Science and Comparative Medicine Vol. 22 P. 277-2778.

Havard – Williams, P. (1976). "The folly of neglecting that natural resource information" Library Association Records Vol.28 pp 409.

Hernon, Peter(1994) Determinant of sample size and selection of the sample concept , general source and softwares. College and Research Libraries. 55 (2) pp171

HINARI - Retrieved 1st June, 2007 from http://www.health internet work.org//

Houghton Bernard and Convey John (1977). On-line Information Retrieval System Redwood Burn. U.K 1977 pp.43-44.

Jagboro, K.O. (2003). A study of internet usage in Nigerian Universities: A case of Obafemi Awolowo UNiversity Ile-Ife, Nigerian. Retrieved 4th February, 2007 from www.firstmonday.org/

Jenson, M. Richardson, D. (1998). Wireless weaves to lesson that gaps in rural telecommunication coverage in Africa In Richardson, D., Paisley L. (Eds). The first mile of connectivity. Advancing Telecommunications for rural development through a participatory communication Approach. FAO, Rome, Italy.

Kapange, Barnabas. ICTs and National Agricultural Research System – The case of Tanzania. and national agricultural research system. Pdf Retrieved 4th February, 2007 from http://www.tzenline.org/pdf/ICEs

Kerlinger, Fred N (1973) Foundation for behavioral Research. 2nd ed. New York pp127

Kiondo, E. (1997). The challenge of CD-ROM and document delivery at the University of Dar es Salaam Library, Tanzania" African *Journal of Library, Achieves and Information Sciences* Vol. 14 No. 1&2 C.B. (2003)

Lec, Su-Sec and Isa Mohamad Zaki (2005). Accessing and sharing Research Information in the ASEAN Region: Malaysia's perspective. Pp 5

Line, M.B (1974) Information and Library needs, wants and uses. ASLIB Proceeding 26(2) pp87

Lui, Ziming (2006) Print vs Electronic resources: a study of user perception, preference and use. Information processing and management: an international journal 42 (2) Pp 583-592

Malina, K A (1989) Seminar on establishment of a National Information and Documentation Network in Tanzania, Dar es Salaam. February, 16-24, pp5-6

Mbawana, S S (1987). The role of information in research and training in Tanzania. Journal of Library and Information Science. Vol12 no1 pp 38-45
Metcalfe, John R. (1993) "Where is the information industry going? A model for the delivery of information in the developing countries. International symposium on new information technology in agriculture. November 10th –12th. Bonn, Germani, pp. 31-35

Molino, Enzo (1982) "Databases: Consideration of relevance to the developing Countries". Unesco Journal of Information science, Librarianship and Archives Administration. Vol IV No4 October- December 1982 pp 245-252

Mosuro, T. (1996). CD-ROM technology and its application at Kenneth Dike Library, University of Ibadan. *Nigeria Library and Information Science Review* Vol.14 no. 1 pp.46-50

Nielsen, J.M. (1985). Searching the veterinary literature via computer. JAVMA, Vol.186 No.10, May 15, pp.1060.

Nelson, N.M. (1990). CD-ROM in European libraries Part 1 CD-ROM librarian Vol. 5 pp26-28.

Nicholas, P., Majid, S. (1989). "The potential of CD-Rom Technology in less developed countries. *Canadian Library Journal* Vol. 46 No 4 pp 257-63.

Nwaeze,A (1990) Information needs and information utilization pattern of non academic staff of university of Ibadan. Unpublished MLS Thesis. University of Ibadan, Nigeria

Ochs, Mary (2005). TEEAL (The Essential Electronic Agricultural Library): A user study Report to Rockefeller Foundation. p.1-22.

Oduwosle A.A. and Akpati, C.B. (2003) "Accessibility and Retrieval of Electronic Information at the University of Agriculture Library Abeokuta", Nigeria *Library review* Vol.52 no 5 pp 228-233.

Ojedokun, Ayoku A. (2001) Internet Access and Usage by Students of the University of Botswana. African Journal of Library and Information science. Vol 11 (2) pp97-107

Okigbo, B.N. (1994). Agricultural Research policies, objectives and priorities: A critical review. In Shaibu, B et al (ed.). Towards Strengthening the Nigerian Agricultural Research System. (Edited by NARP). Ibadan University press. pp. 27 – 72.

Omotayo, Kin; Okey D; Chikwendu and Kola Adebayo (2001). Two decades of World Bank assisted extension services in Nigeria: lessons and challenges for the future. J. Agri. Edu & Exten. (3) pp143-152.

Oni, Folashade Adeyemi (2005) Utilization of Internet facilies among Library and information science academic in Nigerian universities. Unpublished MLS Thesis. Ahmadu Bello University Zaria Nigeria

Oyinloye, A.M. (1998) "The internet: Challenges of academic libraries in Nigeria" Focus 29th (3) pp. 140-150.

Paquot, Elisbeth and Pascal Berque (1995) Summary of the achievement of the CTA since the seminar "Montpellier 1", 1984. *In* The role of information for rural development in ACP countries: review and perspectives- Proceedings of an international seminar. Montpellier, France 12-16 June pp 62

Patitungkho, Kingkaew and Deshpande, Neela J. (2005). Information seeking behaviour of faculty member of Rajabhat University of Bangkok. Webology, 2 (4) Dec. pp10.

Pickard, Alison Jane (1998) The impact of access to electronic and digital information resources on learning opportunities for young people: a grounded theory approach. Information Research, Vol. 4 No 2 October pg 1-7.

PubMed- Retrieved 1st July, 2006 from http://www.ncbi.nlm.nih.gov/entre2/query.fcgi.

Ramlogand, Rabia and Lucy A. Tedd (2005). Use and non use of electronic inforn=mation by undergraduates at the University of West indies Retrieved 4th March 2007 from http://cadir.aber.ac.uk/dspace/bitstream/2160/171/1/oirpaperfin.doc. Pp1

Ray, Kathryn and Day, Joan (1998) Student attitudes towards electronic information resources. Information Research, Vol. 4 No. 2, October 1998. Retrieved 4th March 2007 from http://informationr.net/ir/4-2/paper54.html

Richardson, D. (1997). The internet and rural development opportunities for forestry. *Unasylva* (English ed.) 1997. 48 (189) 3-9.

Risopoulous, S. (1988) Agriculture research and agricultural development. Agricultural in the year 2000: The case for ACP countries. International Forum Athens, November 1988 pp78.

Roberts, Norman(1975) Draft definition, wants, demands and use: A comment. ASLIB Proceeding 27(7) pp307-313

Rossi, Peter H et.al (1983) Handbook of Survey Research. Orlando: Academic Press pp180

Rowlands, Ian (2007) Electronic journals and user behaviour: A review of recent research. Library and Information Science research. Pp 1-28 *In Press*

Rowley, J. *et al* (2002). User behaviour in relation to Electronic information services within the UK higher education community. Journal of Education / Media 27 (3) pp107-122.

Ruddy, Karen (1999). Hand it to then on a Silver platter: Meeting researchers needs in the electronic age. Retrieved 4th March, 2007 from http://www.osti.go/infrum99/papers/ruddy.pdf.

Rusch-fejo D and Siebeky U (1999). Evaluation of usage and acceptance of electronic journals: results of an electronic survey of Max Planck Society researchers. D-lib magazine 5 (10), online. Retrieved 4th March, 2007 from www.doi:10.1045/october99-rush-feja

Salisbury, Lutishoor (2003). Usability of E. Journal and preference for the Virtual periodicals Room: A survey of mathematic Faculty and Graduate Students. *Electronic Journal of Academic and Special Librarianship* Vol.4 no 2-3 (fall 2003).

SciELO– Retrieved 1st June, 2006 from www.scielo.org/

Shika, S.I (1987) A study of social science collection in Kashim Ibrahim Library. ABU Zaria. Unpublished MLS Thesis. Ahmadu Bello University Zaria, Nigeria.

Siebenberg, Galbrait and Brady (2004), Print versus electronic journal use- three Sci/Tec discipline: Whats going on here? Available at www.ala.org/ala/acr/acrlpubs/crljournal/cr/2004/cr/september/siebenberg.pdf

Solange, G.F. (1995). CD-ROM technology in Libraries and Information Units in developing countries African Journal of Library, Archieves and Information Science Vol.5 No.1 *In* Oduwosle A.A. and Akpati, C.B. (2003) Accessibility and Retrieval of Electronic Information at the University of Agriculture Library Abeokuta, Nigeria L*ibrary review* Vol.52 no 5 pp228-233.

Speedy, A.W (1994) "The new communication media in livestock". World Animal Review (80/81) 3 and 4 pp 13-18.

Tenopir,Carol (2003) Use and users of Elecronic Library resources: An overview and analysis of Recent Research Studies. Retrieved 4th March, 2007 from http://www.dir.org/PUBS/reports/pub120.pdf

The Essential Electronic Agricultural Library (TEEAL) Retrieved 2nd February, 2007 from www.teeal.cornell.edu

Tiamiyu M.A (1999) World Wide Web/ Internet and information services in Nigeria in the new millennium. Paper delivered at Nigerian library Association, Abeokuta, Ogun State.

Tommey, and Burton, P.F (1998) A study of the Usage and Attitude among academic . Journal of Information science 24 (6) pp419-429

Treitz, Warner (1988) Transfer of agricultural technologies through dissemination of technical and scientific information. Agriculture in the year 2000: The case for ACP countries – proceeding pp 75.

Warnasuriya, Dilmani (2001) Interchange and exchange of scientific information among S & T information centres/Libraries of the South Asia Region 29 – 30.

Weiss Crowder and Bernerdi (2000) Communicating Agrometorological information to farming communities. Agricultural and Forest Meteorology 103 (2000) pp 185-196.

Wright S. (1990) Application of CD-ROM technology in developing countries program 24, 129-140.

Woolston, J.E. (1984). Information exchange in the north-south context: Is there more to gain through cooperation than in trying to establish a new market? In Aslib proceeding; Vol 30 (1), Jan. pg. 7-14.

APPENDIX 1

Department Of Library and
Information Science
Ahmadu Bello University Zaria
17th October 2006

Dear Respondents,

QUESTIONNAIRE

Kindly find attached a questionnaire which relates to a postgraduate research I am conducting on the topic ‘‘Availability and Utilization of Electronic Information Databases by Agricultural Complex Staff in ABU Zaria.’’ The study intends to determine the extent to which Researchers and Lecturers have access to and utilize electronic database.

I shall be grateful if you could please assist me to complete the attached questionnaire for the purpose.

Thank you.

Yours faithfully,

Mrs. Lydia E. Lakan
Researcher

Appendix 2

SECTION A: PERSONAL BACKGROUND INFORMATION

1. Faculty/Research Institute: ……
2. Department: ……..
3. Status: Lecturer ☐ Research ☐
4. Academic Title (Please Specify)……
5. Field Of Specialization……..

SECTION B: AVAILABLE ELECTRONIC INFORMATION DATABASES IN AGRICULTURAL COMPLEX, ABU ZARIA

Please tick (√) in the appropriate spaces to show which electronic information databases are available for members of your Faculty/Research institute.

1 **Online information databases**

Databases	**Available**	**Not Available**
AGORA Journals		
CAB Abstracts		
MEDLINE		
AGRIS		
AGRICOLA		
HINARI		
PUBMED		
HIGH WIRE		
SciELO		
INASP PERI		
BIOMED CENTRAL		
BMJ PUBLISHSING GROUP		
AFRICAN JOURNALS ONLINE		
Directory of Open Access Journal		
BIOSIS		
Others (specify)		

2 **CD-Rom Information Databases**

Databases	**Available**	**Not Available**
MEDLINE		
CAB Abstracts		
TEEAL		
AGRIS		
AGRICOLA		
VET CD		
BEAST CD		
Others(specify)		

SECTION C: HOW OFTEN DO RESEARCHERS AND LECTURERS USE ELECTRONIC INFORMATION DATABASES IN THE AGRICULTURAL COMPLEX OF A.B.U ZARIA?

1. How often do you use electronic information databases?

DAILY ☐

WEEKLY ☐

MONTHLY ☐

ANNUALLY ☐

NOT AT ALL ☐

2. Do you interact with the system personally?

Yes ☐ No ☐

3. Do you interact with the system through an assistant?

Yes ☐ No ☐

4. Do you have access to the information desired?

Yes ☐ No ☐

SECTION D: REASONS FOR USE OF ELECTRONIC INFORMATION DATABASE DATABASES IN THE AGRICULTURAL COMPLEX OF ABU ZARIA.

How do you agree with the following as being the ways electronic information databases are utilized by Researchers and Lectures in your Faculties and Research Institutions?

Note: Strongly Agree=SA; Agreed=A; Undecided=U: Disagree=D: Strongly Disagreed=SD.

	Utilization Of Electronic Information Databases In The Agricultural Complex Of Abu Zaria.	SA	A	U	D	SD
A	Lecturing					
B	Laboratory/Field research					
C	Write seminar/Conference paper					
D	Research work					
E	Update knowledge					
F	General new information					
G	Current awareness					

Others (specify)……

SECTION E: LEVEL OF SATISFACTION WITH ELECTRONIC INFORMATION DATABASE IN THE AGRICULTURAL COMPLEX

What is the level of satisfaction with electronic information database in the agricultural complex?

HIGHLY SATIFIED ☐

SATISFIED ☐

NOT SATISFIED ☐

HIGHLY NOT SATISFIED ☐

SECTION F: USEFULNESS OF ELECTRONIC INFORMATION SOURCES TO LECTURES AND RESEARCHS IN AGRICULTURAL COMPLEX OF ABU ZARIA.

1 To what extent do you agree with the following statements as being the Usefulness of electronic information sources in the Agricultural complex of ABU Zaria?

Note: Strongly Agree = SA; Agreed = A; Undecided = U; Disagree = D; Strongly Disagreed = SD.

Usefulness Of Electronic Information Sources In The Agricultural Complex Of ABU Zaria?	**SA**	**A**	**U**	**D**	**SD**
Using electronic information reduces the time spend in using print information sources.					
The quantity and quality of publication have improved tremendously as a result of electronic resources.					
Electronic resources have become the most important information sources for research.					
The use of electronic resources helps by providing orientation on a new topic such as starting a new research topic.					
Eliminates the problem of geographic location in the transfer of information.					
The output of a databases search is tailor-made based on the search term used.					

2 Please tick in the appropriate box to indicate preference for electronic or print sources of information.

Electronic ☐

Paper ☐

Both ☐

None of the above ☐

SECTION G: FACTORS AFFECTING THE PROVISION OF ELECTRONIC INFORMATION RESOUCES

NOTE: Note: Strongly Agree = SA; Agreed = A; Undecided = U; Disagree = D; Strongly Disagreed = SD.

Factors Affecting The Provision Of Electronic Information Databases	SA	A	U	D	SD
Slow Internet Services					
High cost of printing of document					
Insufficient computers					
Power outages					
Poor quality print out					
Lack of communicating and promoting to users by librarians					
Low level of computer literacy					
Lack of access to current up-to-date information					
Irrelevant information					
No access to full text of citation abstracts					
Inappropriate information for users (western bias)					
Others (Specify)					

Thank you for completing this questionnaire. Additional information can be written at the back of the questionnaire.