Availability and Utilization of Electronic Information Databases by Staff of the Agricultural Complex, Ahmadu Bello University, Zaria

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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. 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 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. 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.

Introduction

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

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 current information.

Literature review

Electronic information database as defined by Pathak & Das (2000) is “Information stored in a medium, which requires an electronic device to read its content”. Digital data may be processed or stored on various types of media, including magnetic (RAM, hard drive, diskettes, tapes) and optical (CD-ROM, DVD) media. The data can be made accessible either through portable media or, increasingly, online. 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. Their development has made easier the access to relevant information on specific topic in agriculture.

A Compact Disc Read Only Memory (CD-ROM) is a format used for digital data storage on a compact disc. CD's can hold 650-700MB of data (PC Terminology) Also a CD ROM from Glossary of Terms is defined as a storage device for program files and data files that can be read by a computer device. CD ROMs are inserted into the CD ROM drive. This generally has the drive letter F. 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."

Various studies have examined the use of CD ROMs in developing countries especially in libraries, Nwalo, (2000) Oduwole and Akpati (2003). CD ROM provides access to information held by important databases without laying cables. This very important as lack of good telephone services is one of the major hindrances to computerization and networking in libraries in developing countries.

Wikipedia, the free encyclopedia defines an online database as a database accessible via a network, now generally the internet. Some of the online databases in this study are; Commonwealth Agricultural Bureau (CAB) Abstracts, Agricultural Information Services (AGRIS), Agricultural Online Access (AGRICOLA), Biosciences Information Services (BIOSIS), MEDLINE, Scientific Publishers' databases etc.

Some of the characteristics of CD-ROM and On-line 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) and Pathak and Das (2000) are: massive storage capacity, economy, durability, on-site availability and un restricted access, end-user friendliness, multi-media capability, portability and huge storage capacity, data security, save space, easy to handle 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 least a workstation. Internet connectivity is a lot easier for most organizations and institutions in developing countries through the help of international agencies. 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.

The Use of Electronic Information in Agricultural Research

According to Güvenen (1998) Information is one of the basic factor input for scientific and technological progress, and is therefore central to sustaining productivity growth throughout an economy. Information -based economies are therefore well-positioned to compete in research and development, in knowledge creation and serve as economic laboratories for business and government innovation. 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 conduct computer searches to identify appropriate references, articles and abstracts on CD-ROMs or On-line. 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.

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. The Institution include the following; (1)Institute of Agricultural Research (IAR) which 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. (2)National Animal Production Research Institute (NAPRI) is 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. (3) National Agricultural Extension and Research Liaison Services (NAERLS) is into the development, collation, and dissemination of appropriate agricultural technologies and the monitoring and evaluation of agricultural information. (4) Faculty of Agricultures' mandate is to conduct research and training into Agricultural Economics and Rural Sociology, Animal Science, Plant Science and Soil Science, Crop Protection, Agronomy. (5) Faculty of Veterinary Medicine is mandated to conduct research and training into the following broad areas Animal Health and Reproduction, Poultry Health and Reproduction, Animal Drug use, misuse and interaction, Pharmacology, Zoonotic diseases of animals.

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, protection of natural resources and the environment. This results in an increase in food production and income generation. 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 presented by Ochs (2005) with electronic information, 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) and Shika (1987) 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 Nwaeze (1990) and Oni (2005). 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.

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

Research methodology adopted for the study

The study employed a survey research method. Two hundred and nine (209) (65%) was selected with fairly equal representation from different strata for the study. The choice of these population groups is based on the fact that they are involved in productive research; publications, lecture notes etc and might required the use of information in electronic medium. In addition, they form the major group who are likely to provide the information required for the study. Out of the 209 respondents that were administered with questionnaires, 147(70%) respondents duly completed and returned the questionnaires for analysis.

Findings and discussion

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/Internet portals 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 1

Table 1: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 Portal	√	√	√	√	X
2.	CAB ABSTACRTS	√	√	√	√	X
3.	MEDLINE	X	X	X	X	X
4.	AGRIS	X	X	X	X	X
5.	AGRICOLA	√	√	√	√	X
6.	HINARI Portal	X	√	X	X	X
7.	PUBMED	√	√	√	√	X
8.	HIGHWIRE	X	√	X	X	X
9.	INSPERI	√	√	√	√	X
10.	BIOMED CENTRAL	√	√	√	√	X
11.	AFRICAN JOURNALS ONLINE	√	√	√	√	X
12.	DIRECTORY OF OPEN ACCESS Journals	√	X	X	X	X
13.	BIOSIS	X	X	X	X	X
CD-Rom Databases						
14.	TEEAL	√	√	√	√	X
15.	CAB ABSTRACTS	√	√	√	√	X
16.	MEDLINE	X	X	X	X	X
17.	AGRIS	√	x	X	X	X
18.	AGRICOLA	√	√	X	X	X
19.	VET CD	√	√	X	X	√
20.	BEAST CD	X	√	X	X	√

Key: √ = AVAILABLE, x = NOT AVAILABLE

From table 1, 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 Leigh (2001) who noted that internet and other forms of electronic resources are being made available in universities, for teaching, learning and research. The availability of electronic resources opens new vistas for teaching and research. Although acquiring materials in digital forms and organizing them for use is both costly and challenging, electronic resources are be a critical element in universities and research institutions. The library will meet the demand for broader subject access and for cross-campus access with e-resources. Garnes (2007) also noted that through the digital library more and more electronic resources are made available to patrons. The internet and web technology have accelerated the development and urge for change. 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 Lec and Isa (2005) noted that even with the advent of internet and easy access to online and CD – Rom information, not all scientists have access to computers and internet services.

Table 2 Frequency of Use of Electronic Information In the Agricultural Complex, ABU Zaria

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

From the analysis of data presented in Table 2, 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 Voorbij and Ongering (2006) in which they 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.

Table 3 Reasons for the Use of Electronic Information Database by the Respondents

Use of Electronic Information Database	Types of Response					
	Agreed		Undecided		Disagreed	
	Respondents	%	Respondents	%	Respondents	%
Lecturing	109	74.8	8	5.4	9	6.1
Laboratory/Field research	100	68.1	10	6.8	10	6.8
Write Seminar/ Conference Paper	110	74.8	6	4.1	9	6.1
Research Work	120	81.6	5	3.4	6	4.6
Update Knowledge	117	79.6	4	2.7	8	5.4
Generate New Information	112	76.2	5	3.4	9	6.1
Current awareness	114	77.5	5	3.4	5	3.4

Table 4 Usefulness of electronic information databases to researchers and lecturers

Usefulness of electronic information databases	Types of Response					
	Agreed		Undecided		Disagreed	
	Respondents	%	Respondents	%	Respondents	%
Using electronic information reduces the time spent in using printed information sources	110	74.8	8	5.4	11	7.5
The quantity and quality of publication have improved tremendously as a result of Electronic resources	113	76.9	10	6.8	5	3.4
Electronic Resources has become the most important information sources for research	97	66	17	11.6	11	7.4
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
Eliminates the problem of geographic location in the transfer of information	113	76.9	12	8.2	6	4.6
The output of a database search is tailor – made based on the search term used.	94	64	26	17.7	5	3.4

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 koller, Peltenburg, Joachim and Steurer (2001), 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. Due to funding constraints, libraries in Nigeria are unable to provide current books and journals to meet user's needs. Many of the libraries have limited subscription for electronic journals thus most of the users depend on the free databases provider by portals on the internet. Majority of the respondents in this study relied sources for information.

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 Davis (2005) and Yusoff (2006) 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.

Table 5:Factors affecting the provision of Electronic information resources in the Agricultural Complex

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

From table 5 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 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 Lec 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.

Conclusion

Institutions and their libraries are experiencing a massive change in the way they function. Information technology innovations have found their way into applications in libraries; hence the accelerating pace of information technology continuously raises the standards of users' anticipations and expectations of new value-added services.

Today information is available in variety of forms like CD-ROM's, online databases, e-journals, etc. Inventions of devices like CD-ROMs and flash memory cards, which have huge storage capacities, have changed the outlook of libraries. These digital sources of information and storage devices bring drastic changes in libraries in the agricultural complex because of their distinct advantages in convenience of searching, low search times, most up-to-date information, etc. These digital sources also require considerable expenses in infrastructure development. However, this can be overlooked when we see the manifold advantages. Information technology has also impacted on library and information services like reference services, current awareness services, online public access catalogue, etc.

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

Recommendation

1 In view of the huge academic and research resources available through this medium and its usefulness to learning, teaching and research, direct collaboration of scientists, researchers, librarians and information specialist to put together resources that include convenient databases and search engines for cost effective research is very essential.
2 Greater publicity also needs to be given to the sources, especially those that are available at no cost so that more researchers become aware and make use of them.
3 The need for training on ICT is highly recommended. The digital age has brought many opportunities and challenges to the librarians' in university libraries and research institutions. For the Librarians' to make it in the digital age, they must make sure they are adequately trained to initiate and manage the digital resources. The training ICT will support digital and electronic services provision are many.
4 A lot of factors do inhibit the use of electronic information resources, it is therefore, recommended that adequate infrastructure should be made available to enable user benefit from this medium of information dissemination.

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