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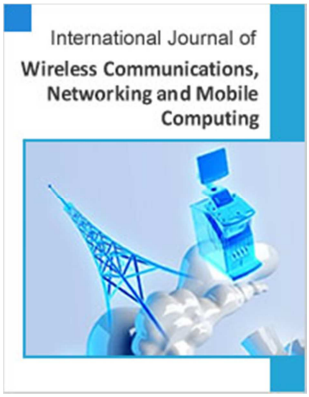

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Potentials of Modern Information Technology Tools in Improving User Access to Agricultural Library Services in Abia State, Nigeria

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Abstract
The typical agricultural library at National Root Crops Research Institute (NRCRI) Umudike near Umuahia, Nigeria in addition to that of the Faculty of Agriculture, Abia State University, Umuahia campus was used to assess the potentials of modern information technology (IT) tools in improving the library user access to agricultural library services in Abia State, Nigeria. Primary data in the study were obtained by combined use of oral interviews and structured questionnaires on randomly selected local library users. Relevant computer software packages were used for the questionnaires' data collation and analysis. Results showed that the questioned library users, who were made up of mainly research scientists (48.98%) and students (26.53%) felt that access to agricultural library services especially in the areas of collection development and management, online public access catalogue (OPAC), intranet and internet need to be improved upon through modern IT tools and digitalization. About a third of the library users could utilize e-library services, and a probit regression analysis showed that local access to internet contributed significantly (at 1% level) in enhancing the ability of the library users in using e-library resources. Finally, comments from both the library users showed that modern IT tools and involment of IT engineering personnel in the system will not only enhance the efficiency of the studied agricultural libraries but will also widen their patronage as most of these library users have access to the internet locally.

1. Introduction

In many instances, the world experiences technological revolutions that change the way people interact, communicate, seek operational information, and generally do business with each other [1, 2]. Digitalization and the Internet have not only transformed the way we communicate with each other but have also transformed the way we work, do business, and seek and retrieve information from libraries [1, 2] of which agriculture libraries are not left out [3].

In their views, Onu [1] and Oladipo *et al.*[4] opined that even internet telephony is a very powerful means of communication and information seeking. This implies that using

a relevant modern information technology tool someone can be many kilometers away and obtain information that would have necessitated traveling to the original source of the information. Currently, modern information technology (IT) tools have become veritable means for information collection and documentation in modern libraries [5]. These IT tools are amenable for the provision of direct on-line library services to library end users that have access to the internet [5].

Unfortunately, it does not seem as if the potentials of these modern IT tools have been explored by the agricultural libraries and information centers in Abia State of Nigeria in the provision of library services to their clients. Therefore, the intention of this study is to explore the potentials of relevant available modern IT tools in improving the services of the agricultural libraries in Abia State, Nigeria, West Africa in which the National Root Crops Research Institute Library, Umudike, Abia State is the most distinct agricultural library.

1.1. Objective of the Study

The objective of the study is to show the potentials of relevant modern information technology tools in improving the user access to the services of agricultural libraries within Abia State, Nigeria.

1.2. The Basic Research Questions

The study is designed to answer the following research questions:

i) What are the basic modern information technology tools available to the agricultural libraries under study and their clients?
ii) What are the potentials of these modern information technology tools in improving user access to the services of the agricultural libraries under study?

1.3. Significance of the Study

The findings of this study will be of immense help to the local agricultural libraries clients and relevant arms of government. It will lead the clients towards enjoying improved access to library services and also guide the local authorities in decision making and budget preparations.

2. Literature Review of Related Works

According to Madu and Dirisu [6], agricultural libraries are specialized kind of libraries that provide the necessary professional literature in agriculture for the parent bodies or institutions. The agricultural libraries in these institutions provide the educational and reference materials that users such as staff and trainees need for good access to relevant agricultural information. They also contribute, through their services, towards strengthening and achieving the goal of their parent organizations or institutions.

2.1. Features of Agricultural Libraries

Agricultural libraries have some distinguishing features. For instance, in the view of Paskoff [7], the users of these libraries are limited in terms of interest and work. This goes further to highlight that the objectives of agricultural libraries are specific rather than general. Their collections of books, periodicals and other information materials are relatively narrow in scope, that is, with emphasis on agriculture or related materials that meet the requirement of their parent bodies.

Paskoff [7] and French [8] also stated that agricultural libraries also have specialists as their users and these include: agricultural research scientists, agricultural students and farmers.

These libraries disseminate information to the library end-users through various means that include Selective Dissemination of Information (SDI) and bibliographical and current awareness services.

Another distinctive purpose of agricultural libraries is that they provide information for immediate practical use by bringing together the user and information in various formats and in the most effective medium to the end users who are mainly the agricultural scientists, researchers, extension agents, students and modern farmers [7, 8].

2.2. Overview of Information Technology (IT) Implementation in Nigerian Libraries

The application of information technologies in Nigerian's agricultural libraries dates back to 1980s. This introduction to the agricultural library operations practically dates back to 1984 with Library and Documentation Centre of the International Institute of Tropical Agriculture (IITA), Ibadan, Oyo State, Nigeria [9]. The IITA library's card catalogue was converted to an electronic format to create the information system code named ALISTRA [1] or Automated Library and Information Service for Agricultre in IITA. This project was followed closely by the Federal Institute of Industrial Research, Oshodi (FIIRO) library in Lagos State, Nigeria in 1988. Since then, the application of information technologies has spread in other Nigerian libraries [9], mainly outside Abia State of Nigeria.

Some academic libraries (Libraries in higher institutions of learning) in Nigeria were also equipped with TINLIB (The Information Navigator Library) software in the early 1990s [11]. Libraries of Nigerian government parastatals and research institutions were earlier introduced to Computerized Documentation System/Integrated Set of Information Systems (micro CDS/ISIS) software in 1988. Organizations such as IITA, FIIRO, and National Library of Nigeria (NLN) have also organized trainings on CDS/ISIS at basic and advanced level [1]. A survey carried out by Nwosu [12] revealed that only eight out of the seventeen Federal Polytechnics have computerized/automated library systems at the end of the 20th century.

At the beginning of the 21st century, Ayo [10] observed that some Nigerian libraries were using information and communication technology (ICT) for data-base management, internet search, website management and general online service for their users. Some of such libraries include those of National University Commission (NUC), Raw Material Research Development Council (RMRDC), University of Ibadan and National Library of Nigeria. Recently, efforts were made for the digitalization of the library of Michael Okpara University of Agriculture, Umudike, Abia State [13]. However, Ayo [10] observed that despite all the Information and Communications Technology (ICT) applications in Nigerian libraries, it could be acknowledged that electronic library system in Nigeria was at the rudimentary stage at the beginning of this century

2.3. Electronic Library

Electronic library provides 24 hour online access to digitized information from physical site and/or website. Sloane [14] acknowledged that the WWW (World Wide Web) hold useful, up to date information on educational electronic libraries, and other categories of libraries. The electronic libraries contain a wealth of simple information of direct application to everyday subjects and users can simultaneously gain access from many locations [5, 14]. Electronic and/or digital libraries therefore add value, save time and space, and reduce the need for proximity to information resources while still emphasizing the quality of the resources [15].

3. Methodology

3.1. Research Design and Physical Visits

Visits were made to the agricultural libraries of National Root Crops Research Institute (NRCRI), Umudike, Abia State, and Faculty of Agriculture, Abia State University, Umuahia Campus. The purpose of the visits was to investigate and analyze the relevant profiles of the library clients with relevant oral interviews and questionnaires. A sample size of fifty library users or clients was used, employing the statistical Completely Randomized Design (CRD).

3.2. Questionnaires

Primary data for the study were obtained with the aid of structured questionnaires administered on randomly selected library users. Fifty questionnaires were distributed to the library users respectively to answer at their own privacy and convenience. Assurances were given to the respondents that their responses will be held confidentially.

3.3. General Comments

The respondents were further requested to mention their observed library constraints and possible ways of improving services of the agricultural libraries in Abia State, Nigeria. Responses for comments were made optional and without restrictions.

3.4. Data Collection and Statistical Analysis

The data from oral interviews during the physical visits were documented in a computer using Microsoft Word software before the questionnaires were physically received from the respondents. Microsoft Excel software of the computer was then used to collate the data from the questionnaires. The data were statistically analyzed with Stata Statistics/ Data Analysis software (version 8.2) of Statacorp, College Station, Texas, U.S.A. The software was originally licensed to Dr. David Bray of Florida International University, Miami, Florida, U.S.A. and had a serial number of 198041965. Descriptive statistics were also used to analyze some collected data while multivariate Probit Regression analysis was used to determine the factors that affected library users' rate of using digital or electronic libraries.

4. Results and Findings

4.1. Library Users' Responses

The socioeconomic profile of the 49 library users that returned their questionnaires is as shown in Table 1. The sampled library users were made up of mainly research scientists (48.98%) and students (26.53%) with only 16.32% of the respondents being above 40yrs (Table 1). This educated sampled library users were made up of males (44.90%) and females (55.10%) with most of them being married (Table 1).

Table 1. *Socio-economic profile of the library users.*

Variables	Frequency	Percentage
Gender		
Male	22	44.90
Female	27	55.10
Age (yrs)		
<20	3	6.12
21-30	21	42.86
31-40	17	34.69
40-50	4	8.16
>50	4	8.16
Marital Status		
Single	19	38.78
Married	30	01.22
Educational Status		
Secondary	5	10.20
Tertiary	43	87.76
Others	1	2.04
Occupation		
Student	13	26.53
Lecturer	1	2.04
Research scientist	24	48.98
Farmer/Agriculturist	4	8.16
Others	7	14.29

Table 2 shows that computer literacy amongst the studied library users was very high (87.76%) with 69.38% rating their level of computer literacy as being between 'Good and

Excellent'. About half of these respondents (51.02%) considered the services of the studied agricultural libraries in Abia State unsatisfactory while 93.88% of them felt that these services needed improvement (Table 3). The mentioned areas that need improvement in order of magnitude were; reference services > inter library services> cataloguing > acquisition > others.

Table 2. *Distribution of the library users' responses on their computer literacy.*

Computer Use	Frequency	Percentage
Computer Literacy		
Yes	43	87.76
No	6	12.25
Rating of computer literacy		
Poor	2	4.08
Fair	7	14.29
Good	18	36.73
Very Good	12	24.49
Excellent	4	8.16

Generally, information search in libraries can presently be done manually or online [16] and in the multiple responses recorded in Table 3 showed that up to 63.27% of the respondents surveyed used the manual method. Majority of the respondents were not satisfied with the manual method, with some of them indicating using modern IT tools (mainly internet and computer) in their on-line search (Table 3).

Table 3. *Distribution of the Library users' responses on quality of library services.*

Library Services	Frequency	Percentage
Satisfactory Services		
Yes	24	48.98
No	25	51.02
Need for Improvement		
Yes	46	93.88
No	3	6.12
Areas that need Improvements*		
Reference services	24	48.98
Cataloguing	14	28.57
Acquisition	11	22.45
Inter Library Services	15	30.61
Others	6	12.25

*Multiple responses recorded

Table 4 shows that local access to internet was available to 87.76% of the studied library users with the search engine of choice of 79.59% of them being Google. A similar study in India showed that 100% of the respondents used Google to search for agricultural information [3]. The agricultural e-resource databases most frequently used by the library users in this study were AGORA (34.69%) and AGRICOLA (14.29%). AGRICOLA (AGRICultural Online Access) is a bibliographic database of citations to the agricultural literature created by the National Agricultural Library of the United States of America and its collaborators [17] with AGORA (Access to Global Online Research on Agriculture) programme of Food and Agriculture Organization (FAO) of United Nations having outstanding digital library collections in the fields of food and agriculture [18]. Though less frequently used by the respondents, TEEAL (which is an acronym for The Essential Electronic Agricultural Library) launched in 1999 as a project of Cornell University's Albert R. Mann Library at Ithaca, New York state, USA is also popular among agricultural library users [19].

Table 4. *Distribution of library users' responses on accessibility to internet and e-searching of information.*

E-resources	Frequency	Percentage
Local Access to Internet		
Yes	43	87.76
No	6	12.25
Search engine often used*		
Google	39	79.59
Yahoo	13	26.53
Others	5	10.20
Frequently used Agriculture e-resource databases**		
AGORA	17	34.69
AGRICOLA	7	14.29
TEEAL	3	6.12
Others	4	8.16

*Multiple responses recorded
**Incomplete responses observed

Table 5 reveals that while 53.06% of the respondents had personal computers. However, only 38.78% of them had their computers connected to the internet. Table 6 also indicates that only 16.33% of the respondents were regular physical users of the studied libraries with only 8.16% allowed to use the computers in these libraries. Interestingly, ≥30% of these library users had IT training and made use of external e-libraries (Fig. 1). This is probably why 100% of these largely literate respondents (as shown in Table1) indicated in Table 6 that modern IT tools can improve the agricultural library services in Abia State. In the opinion of the respondents, services for improvement in these libraries include the following in order of imprtance: browsing > inter library services > acquisition > administration > others.

Table 5. *Distribution of library users' responses on ownership of personal computer and access to internet.*

Computer usage	Frequency	Percentage
Ownership of Personal Computer		
Yes	26	53.06
No	23	46.94
Internet connection to PC's		
Yes	19	38.78
No	15	30.61

*Some unnecessary multiple responses recorde

Table 6. *Distribution of library users' responses on the use and services of NRCRI library.*

Library use/services	Frequency	Percentage
Regularity of library use		
Regular	8	16.33
Not regular	13	26.53
When the need arises	28	57.14
Allowed to use the library's computers		
Yes	4	8.16
No	45	91.84
Ability of modern IT tools to improve the library services and functions		
Yes	49	100
No	0	0
Services for Improvement through IT*		
Inter Library Services	19	38.78
Browsing	33	67.35
Acquisition	14	28.57
Administration	9	18.37
Others	2	4.08

*Multiple responses recorded

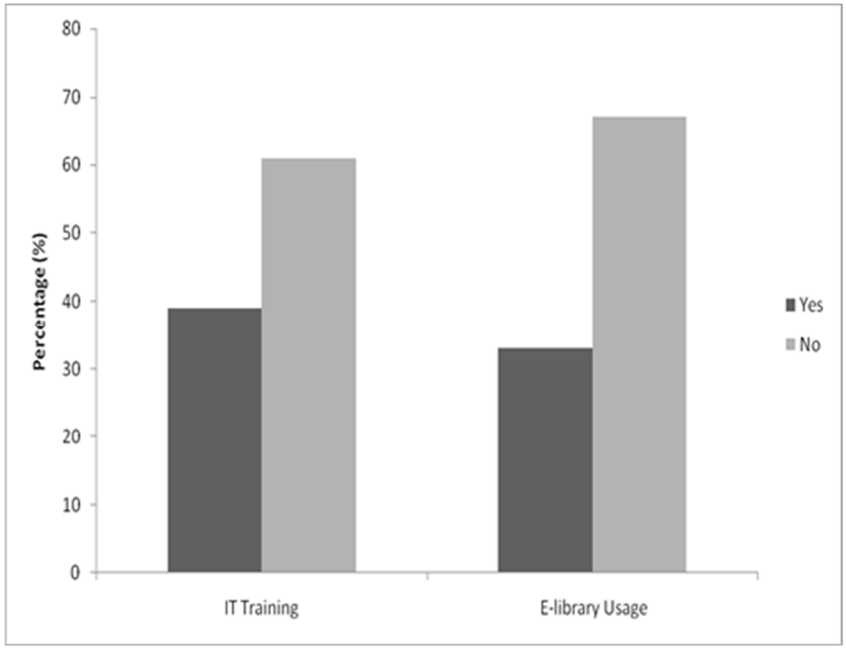

Fig. 1. *Percentage distribution of library users that have IT training and the ability to access e-library.*

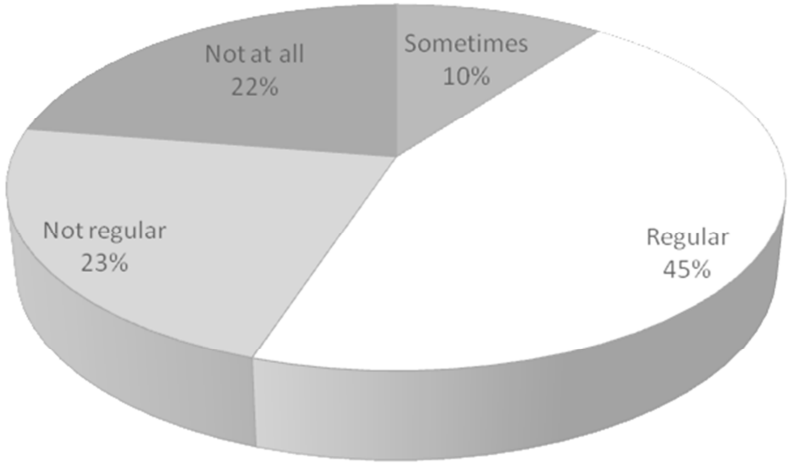

Fig. 2. *Percentage distribution of responses on use of IT tools for research by library users.*

On the other hand, Fig 2 shows that 45% of the respondents regularly were using modern IT tools for their research work with 22% not using IT tools for their research activities. It had earlier been shown in the Table 1 that 77.55% of the respondents can be grouped as research scientists, students and lecturers.

4.2. General Comments and Internet Access

The comments on physical library constraints by the library users are in Table 7. These library patrons were emphatic on the need for enhanced digitalization and the use of modern information technology tools in improving the services of the studied libraries (Table 8). The suggestions of the library users for proper application of modern IT tools and employment of IT engineers / IT Engineering experts will improve the library services (Table 8) cannot be faulted [4].

This is more so as e-libraries and/or digital libraries are helping modern library users to have access to current literature at the comfort of their homes, offices and educational institutions [16].

Table 7. *Library constraints given by the library users.*

S/No	Comments
1.	Poor internet services.
2.	Obsolete literature (books, journals etc.).
3.	Poor reference service.
4.	Near absence of e-library service.
5.	Inadequate number of computers.
6.	No facility for users browsing of books.
7.	Inadequate collection of printed materials.
8.	Restriction on the use of IT facilities.
9.	Poor services by library workers.
10.	Lack of IT tools for information search.
11.	Inability to adopt IT.
12.	Hot reading environment / improper air conditioning.
13.	Poor library administration.
14.	Poor staffing in some relevant areas.
15.	Slow internet speed.
16.	Poor acquisition.

Table 8. *Suggestions by library users on how to improve the library services.*

S/No	Suggestions (Summarized)
1.	Internet connectivity to all library computers.
2.	Provision of efficient internet services.
3.	Linking the digital library section to the internet.
4.	Improving the intranet services of the digital library for NRCRI staff/researchers.
5.	Increasing the NRCRI internet band width.
6.	Converting hardcopy books to electronic version for easier access.
7.	Procurement or acquisition of contemporary or current printed materials.
8.	Provision of more computers.
9.	Employment of more library scientists.
10.	Employment of IT engineers/IT Engineering experts.
11.	Improving the cataloguing and reference sections.
12.	Introduction of IT tools for all relevant library services and functions.
13.	Library inter-networking.
14.	Proper training on the use and importance of IT to library staff and users.
15.	Establishment of a functional e-library service.
16.	Liberalizing the access to the existing NRCRI digital library.
17.	Use of IT tools for fast sourcing of information.
18.	Storage of published works etc. in the library's website/ institutional repository
19.	Increasing the number of computers in NRCRI digital library.
20.	Proper air conditioning of the libraries

Table 9. *Probit Analysis for use of e - library by the library users.*

Variables	Coefficient	z	P > /z/
Gender (X1)	-1.352	-1.45	0.147
Age (X2)	0.0521	0.13	0.899
Education (X3)	0.754	0.6	0.552
Occupation (X4)	0.287	0.5	0.619
IT training (X5)	1.054	1.27	0.205
Internet Access (X6)	7.47	6.08	0.000***
Constant	3.9.34	1.03	0.305

***Indicates significant level at 1%

Probit regression analysis for the use of e-library by the library users (with many variables used in the study) clearly showed that internet access was positive and highly significant at 1% level (Table 9). Fortunately, internet access to the library users in Abia State is largely available. Therefore proper integration of modern IT tools in relevant operations of the local libraries, especially in their digital library section, will really enhance service delivery to most of the users who were observed not to be regular goers to the physical library building.

4.3. Summary of Findings

The agricultural libraries in Abia State, Nigeria (with under utilized digital library section at NRCRI, Umudike, Abia State) provide typical agricultural library services with the local users desiring improved services through relevant information technology tools and training. While computer and its usage were found important for the improved services of the physical library, internet access was found to be very

necessary for the digital library operations.

5. Conclusion and Recommendations

5.1. Conclusion

It can be concluded that the potentials of modern information technology tools in improving the local library user accessibility to agricultural libraries in Abia State, Nigeria are enormous. An example is the role well engineered internet connectivity will play in improved library access to digital library sections in the state libraries that contain agricultural information.

5.2. Recommendations

It is therefore recommended that the local Nigerian agricultural library users should be properly trained on the use of the relevant modern IT tools and made aware of their importance in agricultural library services. Local authorities in Abia State are required to fund the upgrading of the IT facilities in the state especially those that are relevant to agricultural library services. In addition to intranet services, the local agricultural libraries, should also allow the global reading population to have access to their digital or online library collections via the internet.

5.3. Implication of the Study

The study shows that modern information technology tools, when properly applied has the potential of enhancing the efficiency of agricultural libraries in Abia State, Nigeria as exemplified by the National Root Crops Research Institute library, Umudike. The modern information technology tools that are needed to be employed are those relevant to library services and administration, such as computers, intranet and internet. An improved operational status of the digital library section of NRCRI library and any other agricultural library in the state will make information sourcing easier for the library users.

5.4. Suggestions for Further Studies

There is need for further studies on the development more user friendly computer softwares and wireless hardwares. In addition, the most effective ways of enhancing access to the agricultural e-resources or databases of the local agricultural library need to be investigated.

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