The Impact of TEEAL on the usage of AGORA in Academic and Research Institutions in Uganda

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Abstract

The Essential Electronic Agricultural Library (TEEAL) and the Access to Global Online Research in Agriculture (AGORA) are key information support programs in learning, teaching, and research. They provide access to relevant scientific evidence, in agriculture and related sciences. While AGORA was introduced in Uganda in 2005, TEEAL was introduced earlier as a "Library in a Box" and later as LAN-TEEAL. With the recent increase in acquisition of TEEAL sets at a number of academic and research institutions in Uganda and with the TEEAL and AGORA campaigns through the training organized under the Information Training and Outreach Center for Africa (ITOCA), it is not clear how TEEAL has impacted on Agricultural research and on the usage of AGORA as an online program in Uganda. The aim of his paper was to explore how TEEAL is used compared to its counterpart, AGORA. The key question to this study relates to respondents' preference among the two programs and the underlying reasons. An online questionnaire was used to gather responses regarding preference and use of the two programs by students, academics, librarians, IT specialists, and researchers at the various institutions in Uganda. The study was informed by a review of literature from related studies. Findings from 59 respondents indicate that all (100%) the respondents had an idea of TEEAL while for AGORA it was 58 (98.3%) respondents. Of the respondents, 52.5% preferred TEEAL to AGORA because it required no internet access, although the majority believed that AGORA was more important than TEEAL, due to the coverage of more relevant online scientific literature. The most prominent challenges to TEEAL and AGORA were network failures and slow internet, respectively. TEEAL and AGORA were both acknowledged to be very vital resources for academic and research institutions in Uganda. TEEAL mainly had one advantage over AGORA and that is being an offline resource that can be used in institutions with unreliable and inadequate internet. AGORA was also found to have an advantage over TEEAL in that it had a wider content coverage. The most common strategy for improving the use of both programs, as stated by the respondents, was increasing awareness through training and marketing. It was thus recommended that the program hosts utilize the results of this study to improve the utilization of these vital agricultural databases through further training and awareness. It was also recommended that institutions be advised to strengthen their IT infrastructure to support the programs and ensure effective use, for increasing their academic and research output.

Keywords: TEEAL, AGORA, E-Resources, Agricultural information, Research4Life.

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1. Introduction

Access to online information in academic and research institutions has increased over the years, with improvements in ICTs (Berzins & Hudson, 2011), an increase in student in-take as well as increased agricultural and related sciences research (Angello, 2010). The Essential Electronic Agricultural Library (TEEAL) and the Access to Global Online Research in Agriculture (AGORA) have taken center stage in supporting learning, teaching, and research in Africa. Uganda in particular currently has about forty-five (45) academic and research institutions registered for and using AGORA (Research4Life Communications, 2016), while more than eighteen (18) academic and research institutions have received TEEAL sets and are currently using the program.

1.1 About AGORA

AGORA is one of the four portals of Research4Life programs led by the Food and Agriculture Organization (FAO), in collaboration with publishers and other partners. It started in October 2003 and currently provides access to more than 6500 journals from the world's leading academic publishers. AGORA aims at improving: the quality and effectiveness of agricultural research, education, and training in low-income countries, as well as food security (Lwoga, Chimwaza, Aronson, & Vent, 2007). In Uganda, more than forty-four institutions have so far registered to use AGORA.

1.2 About TEEAL

The Essential Electronic Agricultural Library (TEEAL) is a project of Cornell University's Albert R. Mann Library, Ithaca, New York (http://teeal.cornell.edu/), developed in 1998-1999, and is a full-text and bibliographic database of about 465,000 full-text articles from over 350 agricultural and bioscience journals available to over 100 eligible developing countries. TEEAL content is updated annually and currently spans from the period of 1993-2014. It includes over two million pages of papers, provided by over 80 participating publishers and index providers. TEEAL was initially available on CD-ROM but during the summer of 2005 LanTEEAL was introduced, making access easy through the Local Area Networks (Vent, 2005). The initial LanTEEAL was developed on a hard drive which could be connected to the computer using a Universal Serial Bus (USB). The most recent version is a mini-server computer with full computer functionality which can be connected to a Local Area Network (LAN) switch using an Ethernet cable. The journal titles covered by TEEAL were selected by international scientists using citation analysis of journals frequently used by agricultural scientists in developing countries and so form a core set of relevant literature sources. TEEAL is an off-line database that can be accessed even by institutions that have internet challenges. The beneficiary countries include Burkina Faso, Ethiopia, Ghana, Nigeria, Tanzania, Uganda, as well as Bangladesh. Institutions in these countries have acquired the TEEAL sets through several funding sources such as; CTA, USAID, and the Bill and Melinda gates foundation. This funding initiative followed recommendations from a report by Ochs (2005) to the Rockefeller Foundation in which she called for further support to the developing world as regards access to scientific literature.

2. Background

Cornell University's Albert R. Mann Library, in conjunction with ITOCA, received a grant from the Bill and Melinda Gates Foundation to bridge the information gap between developed and developing countries through TEEAL production, distribution, outreach, marketing, and training throughout the African continent. It is against this background that ITOCA recruited training and outreach officers in several African countries to promote TEEAL and to ensure that researchers and students in these countries can access the most current literature in TEEAL. Not only did the

training program focus on building scientific capacity, but also the economic capacity throughout the world (Chimwaza et al., 2017). Uganda, being one of the beneficiary countries, two Training and Outreach Officers were recruited and these helped in delivering the training to partner institutions. Between May 2014 and March 2016, twenty (20) workshops (institutional and local) were conducted in Uganda covering several academic and research institutions, which included; Makerere University, Busitema University, Uganda Martyrs University (UMU), Ankole Western Institute of Science, and Technology (AWIST), Uganda Christian University (UCU), Gulu University, Kyambogo University, African Rural University (ARU), Bishop Stuart University (BSU), and National Fisheries Resources Research Institute (NaFIRRI). Initially, each institution received one major funded training and the trainees were encouraged to conduct subsequent local training at their respective institutions.

The Librarians normally receive queries about authentication and download failures while using the online journals and such challenges are, to a greater extent, external to the institutions. However, with TEEAL, the challenges are always internal, short-lived, and mostly, solvable, internally. Therefore, as trainers who participated in creating awareness of TEEAL in Uganda, it was necessary to establish whether the activities conducted created an impact in the research community. It is against this background that the researchers set out to study the impact of TEEAL on AGORA in Uganda.

3. Problem statement

TEEAL and AGORA are two essential information resources in agricultural research. Whereas AGORA and TEEAL serve the same purpose, the mode of access is different. AGORA is accessed entirely through the internet while TEEAL is accessed offline. Some agricultural research and academic institutions are based in rural areas with limited access to the internet, thus, the relevance of TEEAL. The Essential Electronic Agricultural Library (TEEAL) which is accessed through the local area network (LanTEEAL), launched in 2005, was introduced to enable a larger group of researchers to access the resources simultaneously and this has greatly impacted on the agricultural research in Uganda and other developing countries. The advent of LanTEEAL saw some researchers switching from AGORA to TEEAL. However, it was not yet known how TEEAL had impacted on AGORA, in the institutions with varying infrastructure development.

4. Objectives of the study

The main aim of this study was to investigate the impact of the usage of TEEAL on AGORA in academic and research institutions in Uganda. To achieve this, the study focused on the following specific objectives:

   I. To determine the respondents' knowledge of TEEAL and AGORA
   II. To establish the participants' preference for the two programs (TEEAL and AGORA) and the reasons behind the preferences.
   III. To investigate the impact of TEEAL and AGORA on Agricultural research and academia in Uganda
   IV. To identify the challenges of using TEEAL and AGORA and the strategies that can be employed to improve their usage in the academic and research environments

5. Literature review

This section involves literature reviewed on related studies covering the usage of electronic information resources, information-seeking behavior, and preferences relating to information access and dissemination.

5.1 Access and usage of electronic agricultural information in academic and agricultural research institutions

Recent studies about the usage of agricultural information resources have revealed that the advancement in technology which led to the introduction of electronic access to information has greatly revolutionized the access and sharing of scientific literature (Okorie, 2010). The electronic information sharing provides a lot of opportunities for libraries and information centers to provide better services to their users (Salanje, 2005). For agricultural communities such as the rural farmers who have no formal training in the use of ICTs to access electronic information, Akullo and Mulumba (2016) identified the use of radios as the most effective means of disseminating agricultural information to the farmers. However, those who have some formal training and are also able to use ICT, such as staff at District Farm Institutes may access the information and translate it to the poor rural farmers who are not trained.

5.2 Preferences in the usage of agricultural information in academic and agricultural research institutions

Several information sources, such as the internet, institutional libraries, and mass media, and resources such as textbooks, reports, journal articles, are available for researchers, academics, and practitioners to access and use information via the various channels available to them. Information is very important in any form of development, including agriculture and related sciences. Ronald, Silayo, and Abdalah (2015) revealed that various types of information sources were used to find information for seaweeds farming. This was also supported by the results of the study by Khan, Muhammad, Chaudhry, and Khan (2010). Much of the studies have concentrated on preferences of information sources or channels, without focusing on particular information resources. There were limited studies on electronic information resources. Hence, the need to investigate the use of AGORA and TEEAL.

5.3 Contribution and impact of information on agricultural development

Agricultural information plays a vital role in agricultural development and this improves the livelihoods of farmers (Mittal & Mehar, 2013). The same study found out that agricultural information is dynamic, due to increased awareness of farmers' information needs. In a study by Alam and Haque (2014) to determine the contribution of television channels in disseminating agricultural information for the agricultural development of Bangladesh, it was observed that the farmers were satisfied with the agricultural information they were getting from the television programs and that they used such information to improve on their agricultural production. In Uganda, agricultural information has played a vital role in the improvement of farming practices, especially by small scale farmers. A study by Masuku et al (2010) found out that Agricultural information is a key component in improving small-scale agricultural production and linking increased production to remunerative markets, thus leading to improved rural livelihoods, food security, and national economies. There was still limited literature on the impact of agricultural information on agriculturalists in academic and research institutions, and whereas Alam and Haque (2014) connote that agriculture and farmers are correlated there was a necessity to study the information-seeking behavior of the elite class of agriculturalists, who use agricultural information in academic and research activities. Thus, the need for investigation on the use of AGORA and TEEAL

5.4 Challenges of accessing electronic agricultural databases and recommendations to improved access

A study by Okorie (2010) on the utilization of automated electronic information services disclosed that most library users prefer accessing electronic resources and that TEEAL is one of the most prominently used databases in agricultural research at the University of Agriculture Library,

Abeokuta, Nigeria. However, the studies by Kamar (2008), Okorie (2010), and Salaam (2007) highlight ICT infrastructure as the most prominent challenge to accessing electronic information. Other major challenges include a lack of awareness of information resources available to the users (Adetomiwa & Okwilagwe, 2018). Subsequent recommendations, therefore, focus on improving the ICT infrastructure and enhance the awareness campaigns about the existence and updates of the electronic databases. Nevertheless, with the recent advances in technology, most institutions implemented the recommendations from the studies to improve their ICT infrastructure, although it was still established that some users still preferred to use simple search phrases rather than applying advanced search tools like the Boolean operators (Zgambo, 2019). A study by Mulumba (2020) to assess the utilization of information resources by entomologists in Uganda established that slow internet and copyright restrictions were the most prominent barriers to information access. With limited research about access to electronic information by agriculturalists in academic and research institutions in Uganda, the research found it necessary to conduct a study about the current use of electronic agricultural databases (TEEAL and AGORA), to establish the current trend of challenges and recommendations towards improving access.

6. Scope of the study

This article focuses on the usage of TEEAL and AGORA in institutions that have received the TEEAL-AGORA Training-of-the Trainer workshops in Uganda.

Figure 1: A map of Uganda indicating the areas (institutions) of study - Adopted and modified from "Facts.co" (n.d.)

The institutions include Makerere University, Kyambogo University, Busitema University, Gulu University, Uganda Christian University Mukono (UCU), Uganda Martyrs University, Nkozi (UMU), Bishop Stuart University (BSU), Ankole Western Institute of Science and Technology (AWIST), African Rural University (ARU), National Fisheries Resources Research Institute (NaFIRRI), and a few others organizations such as districts and local governments. The participants of the study were those that participated in the workshops, coming from the partner institutions and districts and local government. The study looked at the gender distribution of the participants, their usage and preferences to the TEEAL and AGORA programs, and the challenges encountered.

7. Methodology

Data for this study were collected using an online questionnaire sent to 128 participants after 20 workshops carried out in Uganda from April 2014 to October 2015. The questionnaire was used to collect both qualitative and quantitative data, which were analyzed and reported in the form of tables, graphs, pie charts, and narratives.

Forty-four institutions are registered for AGORA in Uganda and 17 institutions received TEEAL sets, and of these, only ten had so far received a TEEAL-AGORA training opportunity organized by ITOCA and funded by Cornell University and the Bill and Melinda Gates Foundation.

The study population involved a mixture of researchers, faculty, students, ICT staff, and librarians.

8. Results

The workshops covered areas such as; gender distribution of the respondents, institutional affiliation and primary status of the respondents, profession/specialty, respondents' knowledge of TEEAL and AGORA programs, preference of any of the two programs, rating of the programs, challenges faced in accessing the programs and recommendations.

8.1 Demographic characteristics of respondents

This section addresses the demographic characteristics of the respondents, such as their gender distribution

Gender distribution of the respondents indicated that 37 (62.7%) were males whereas 22 (37.3%) of them were females. This shows that more males than females participated in the study. The findings are reported in figure 2.
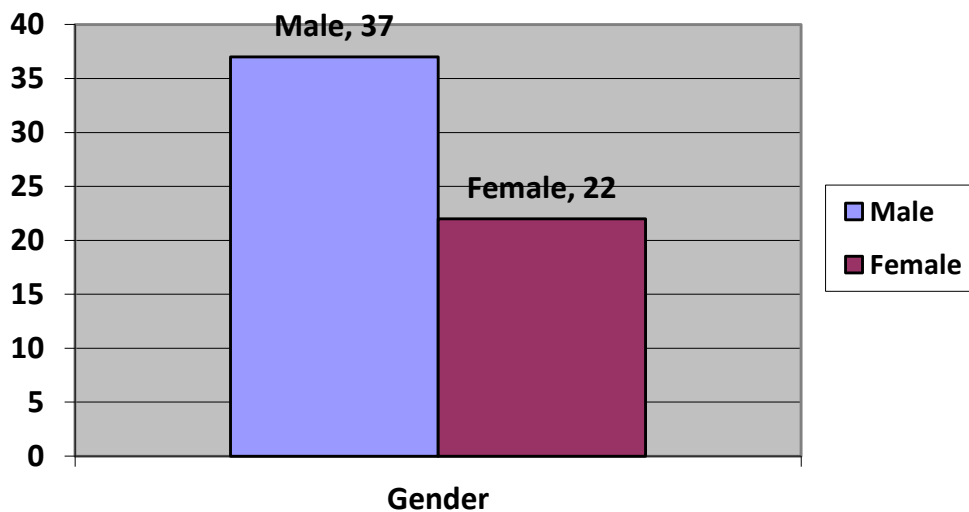

Figure 2: Gender distribution of participants

8.2 Participants and their affiliated institutions.

This section presents the participants, their affiliated institutions, and their primary roles at the respective institutions.

Table 1: Primary status of the respondents at their affiliated institutions

Name of institution	No. of Researchers	No. of Faculty	No. of Librarians	No. of Students	No. of ICT staff	Total
Makerere University	1		3	3		7
Busitema University		1	2		2	5
Uganda Martyrs University		1	3	5		9
Ankole Western Institute of Science and Technology (AWIST)			3		1	4
Uganda Christian University (UCU)		2	3	1		6
Gulu University		1	1			2
Kyambogo University		1	4	3		8
African Rural University (ARU)	1		2		1	4
Bishop Stuart University (BSU)		2	1			3
National Fisheries Resources Research Institute (NaFIRRI)	5			1		6
Others (MUST, Bugema Univ. & MbaZARDI)	2		2		1	5
Total	**9**	**8**	**24**	**13**	**5**	**59**

It was observed from Table 1 above that the majority of the respondents were Librarians (24) followed by students (13), researchers (9), lecturers (8), and ICT staff (5) who comprised the least number of participants. It was established that TEEAL-AGORA workshops, as a criterion involved more librarians than any other category because it is believed that librarians are mandated to pass on the skills to others while most faculty are likely to keep the skills to themselves. Thus, the high number of librarians in this study. And also, it may indicate that information usage studies mostly interest librarians as opposed to lecturers. Most institutions have a limited number of ICT staff and, therefore, their perceived least participation in the study was justifiable. The institutions which had higher responses than others such as UMU, Kyambogo, Makerere, and UCU are older in their establishment, have higher university populations, and, are also located near Uganda's capital city and therefore have bigger numbers of participants. The institutions with the least responses are largely rural-based and far away from the city, such as Gulu University, BSU, ARU, and AWIST. Since the survey used an online questionnaire, it also implies that rural institutions still face ICT challenges such as regular and/or good access to the internet.

Table 2: Specialties of the respondents

Field of specialty	Frequency (f)	Percentage (%)
Agriculture	18	30.5
Environmental Sciences	3	5.1
Health Sciences	1	1.7
Information Technology (IT)	6	10.2
Library and Information Science (LIS)	22	37.3
Biology	2	3.4
Other	7	11.9
TOTAL (N)	**59**	**100**

The respondents were of varying specialties at their institutions, despite their primary roles at the institutions. Table 2 shows the frequencies and percentages of the respondents' specialties.

From Table 2, the majority of the participants of this survey were Librarians. Subsequently, the participants were specialists in Library and Information Science (LIS). Only one participant was observed to be a specialist in Health Sciences. Although the AGORA and TEEAL programs were developed with an Agricultural theme as the main focus, the content of the databases encompasses a wide variety of science fields, including Health Sciences. Therefore, the study sought it viable to enlist responses also from science specialists other than Agriculture and LIS. From the study, a good number of responses were received from other fields like environmental sciences (3), IT (6), and Biology (2). This indicates that the findings of this study are representative of a wide diversity of users of the sciences databases.

The researches sought to find out if the respondents were knowledgeable about TEEAL and AGORA programs. The questions were asked for the respondents to state if they knew TEEAL and AGORA. All the 59 (100%) respondents indicated that they knew TEEAL, well as 58 (98.3%) of the respondents indicated that they knew AGORA. This response rate provided evidence of the impact the TEEAL-AGORA training had made in creating awareness of the two Agricultural databases.

Table 3: Reasons for preference of the Access to Global Online Research in Agriculture (AGORA) program to TEEAL

Reason	Frequency (f)	Percentage (%)
Easy access to relevant and online content	8	26.7
AGORA has a robust subject coverage	8	26.7
Always up to date	4	13.3
Has more content than TEEAL	3	10.0
I don't have access to TEEAL	2	6.7
Easy to navigate	2	6.7
I am more familiar with AGORA	1	3.3
AGORA has links to external databases	1	3.3
It can be accessed outside the institution	1	3.3
Total	30	100

Table 4: Reasons for preference of The Essential Electronic Agricultural Library (TEEAL) to AGORA

Reason	Frequency (f)	Percentage (%)
No internet required	15	38.5
Easy to navigate	9	23.1
Downloads are fast	4	10.3
No major authentication required	2	5.1
Has a lot of content	2	5.1
Has a wide subject coverage	2	5.1
Has appropriate content	1	2.6
I am more familiar to TEEAL than AGORA	1	2.6
It is easy to train others	1	2.6
It has more specific content than AGORA	1	2.6
It can be institutionalized	1	2.6
Total	39	100

When the participants of the survey were asked which of the two programs (TEEAL and AGORA) they preferred, the results from the 59 respondents indicate that 52.5% of them preferred TEEAL to

AGORA, which scored a preference rate of 47.5%. The participants were asked an open-ended question to provide reasons for their choice of preference. The responses were recorded, coded, analyzed and presented as shown in Tables 3 and 4

The study, as presented in tables 3 and 4 established that the members who preferred AGORA to TEEAL mainly based on the reasons that it provides easy access to relevant online content, having robust subject coverage, and being up to date. On the other hand, the members who preferred TEEAL to AGORA based on the fact that TEEAL does not require an internet connection, it is easy to navigate, and that it provides fast downloads for research content. It can be observed that some members preferred one program to the other because they have interacted more with one or that that don't have access to the other. There was also a diversity in perception of the two programs where some members perceived TEEAL to have a wider subject coverage yet others thought that AGORA has better subject coverage. However, in principle, leaving other factors constant, AGORA provides wider coverage than TEEAL.

8.1 Rating of AGORA and TEEAL

The participants were also asked to rate the importance of the AGORA and TEEAL on a scale of 1 to 5 (where 1 = Not important and 5 = Very important) AGORA was rated higher with 29 (49.2%) respondents recognizing it as very important compared to TEEAL with 22 (37.3%) respondents reporting it as very important. The detailed results are presented in Figure 3.
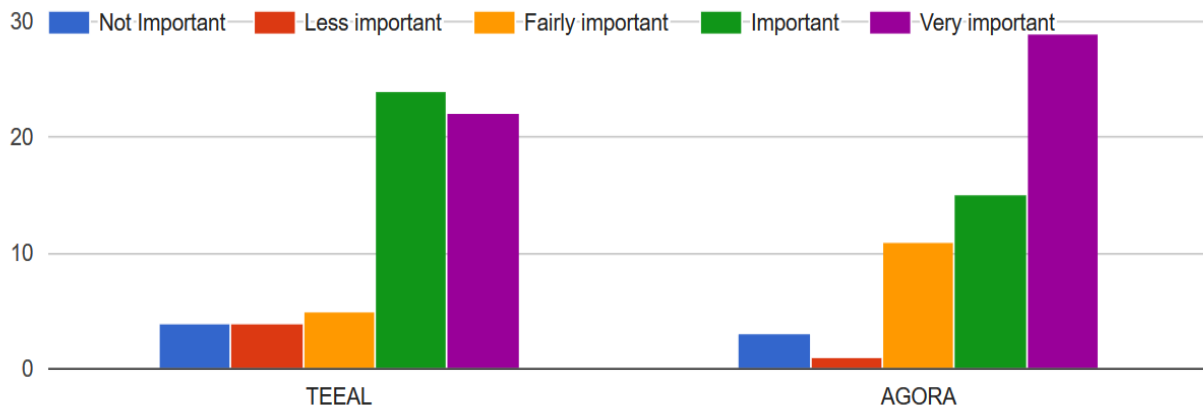

Figure 3: Rating of the importance of AGORA and TEEAL by the respondents

However, the responses regarding the importance of the databases could also be influenced by other factors such as participants' familiarity or whether one database met the needs of the information searcher at that a particular time.

8.2 Challenges of Using TEEAL and AGORA

The participants of the study were asked to state the challenges they faced while using the two programs. This question was an open-ended question intended to elicit un-restricted responses. The responses were then captured, coded, analyzed, and presented in themes as shown in tables 5 and 6.

Table 5: Challenges of using TEEAL

Themes	Frequency of coded responses(f)
Network and access issues	14
Limited content coverage	12
Electricity interruptions	6
Lack of off-campus access	6
Non-availability of TEEAL	2
Poor content and interface structure	4

Table 6: Challenges of using AGORA

Themes	Frequency of coded responses (f)
Internet problems	12
Access issues	26
Navigation challenges	5
Power failure	2
Information overload	1

The results from responses to the question about challenges to accessing TEEAL and AGORA indicate that ICT infrastructure and electricity availability still have a very big role to play in accessing electronic information resources at institutions. The respondents reported that power and network failures are the major causes of frustration while using TEEAL, and restriction of content in AGORA;

"The only major challenge occurs when the power goes off because the TEEAL machine does not back up power to remain operating" "Sometimes some resources in AGORA are unavailable as publishers demand special accessibility passwords or subscriptions".

Accordingly, AGORA users reported that the speed of internet many times cause the article downloads to be too slow;

"When the internet is slow I cannot access this database. Therefore, there is time wastage when doing research".

However, with the current government initiatives to improve the IT infrastructure, it is anticipated that the magnitude of the IT challenges will drastically reduce. The other major hindrances to using TEEAL include; technical issues that occasionally affect the proper functioning of the TEEAL sets, not being up to date with the recent publications, interruptions due to unstable power supply, lack of access while off the campus, and limited content coverage. In using AGORA, the other prominent challenges include; authentication issues, where passwords keep changing, lack of access to some key desired content, AGORA being difficult to navigate, and multiple authentications while opening some journals.

8.3 Strategies to improve the usage of TEEAL and AGORA at institutions
The survey respondents were asked to suggest ways that could help in improving the usage of TEEAL and AGORA at their respective institutions. The suggestions were recorded as follows;
TEEAL
- The database should be updated promptly.

- Should conduct more regular training and create more awareness especially to the tutors and lecturers at institutions.
- Should promote the use of Document Delivery Service when one is out of the institution
- Should include more content in TEEAL
- Provide for remote access, especially to the most rural institutions
- Include full book chapters and e-books to the content i.e. books on agricultural mechanization
- The use of logins should be removed so that whoever is on his/her institutional network can openly access the database
- Need to provide power backups to prevent the effects of power shutdowns e.g. an internal battery within the TEEAL machine or institutions should be encouraged to acquire standby generators. TEEAL machine can be advanced to a Solar recharging machine to cub the challenge of power shed off
- Diversification to include databases that link to all the key specialties.
- Institution Technicians should be given ample training to troubleshoot any emergencies associated with TEEAL
- There is a need for more marketing strategies

AGORA
- Password authentication should be limited or removed
- The customer service helpline should be readily availed in case one needs help
- Access should be allowed even when one travels to another country
- Monthly sessions or webinars should be arranged
- I would rather say add more recent research resources in diverse disciplines.
- May consider making it available offline due to internet connectivity challenges in some areas
- Making all journals and journal articles accessible in full texts rather than abstracts and links to other sites
- Institutions should be encouraged to put the link to the websites so that one does not have to go round through the Research4Life website.
- Encourage the entire world to use the database
- May consider reducing on the pop-ups on the access link
- Increase the open access journals
- Optimize quick access to full papers
- Institutions should be encouraged to improve their internet infrastructure
- FAO should encourage beneficiary institutions to market the program, and these are some of the marketing strategies that can improve AGORA usage; use of notice boards, social media, brochures, user-education, incorporate some aspects of the training into the curricula e.g. that of research methodology, mentorship through student supervision by lecturers, flyers, one-on-one marketing, especially by librarians, lectures using it as a point of reference during lecturers
- Set up grants for helping or supporting the installation of necessary infrastructure in institutions for easy access to this program.

The strategy that was common to both resources was increased regular training sessions in the use of these databases. The fact that these databases are always updated to improve and ease access and retrieval of information, it is logical that regular sessions be conducted to enable continued use of these resources.

9. Conclusions and recommendations

The key outcomes from this study indicate that most users of the agricultural information through the TEEAL and AGORA programs in Uganda preferred TEEAL to AGORA and this preference was largely attributed to the aspect of lack of internet requirement for accessing TEEAL. However,

AGORA was identified as more important than TEEAL in agricultural access to relevant online research content and that it has robust subject coverage. Of the challenges faced while using TEEAL and AGORA databases, respondents reported network failures as the most prominent factor affecting TEEAL usage while internet speed greatly affects the usage of AGORA in Ugandan institutions. The study indicates that while both resources are important for learning, teaching, and research, they also complement each other, and it is therefore vital that institutions have access to both. Since TEEAL does not require an internet connection to access its resources, it is pertinent to conclude that it has had a positive impact on AGORA users, especially those who have internet challenges. They have an alternative source of information.

The respondents suggested some strategies to boost the usage of the resources in the two programs, and common to both is increasing the awareness strategies through regular training and marketing.

It is recommended that the program hosts critically review the results of this study and identify areas which can be improved on to achieve the objectives of the programs and that institutions should increase the ICT budgets to put in place infrastructure that can effectively support the efficient use of the programs to improve institutional academic and research outputs in the fields covered by the programs.

Furthermore, it is recommended that the TEEAL-AGORA project, to benefit all Ugandans, it should be extended to rural farmers, at most, District Farm Institutes to be accessible by rural farmers.

Conflict of Interest: The authors declare no conflict of interest.

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