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# The Usefulness of Available ICT Resources in Higher Education Institutions in Providing Services Related to Online Database Systems

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## Abstract

The study aimed at assessing the usefulness of available ICT resources in providing services related to online database systems in Higher Education Institutions (HEIs) in Tanzania to support academic research and consultancy which are core activities of higher education learning institutions. To attain this objective, the study adopted quantitative and qualitative methods approach in which a survey was run across 12 HEIs in Tanzania. A total of 595 students, and 149 Academic Staff participated in this study. Staff and Students were respondents for this study and the total turn up was 88.57%. Six (6) questions were prepared to address this objective - these are questions related to Wireless internet connection, computer laboratories, internet connection speed, e-book library, Library Management Systems and Library staff help desks. Findings show that available ICT resources in HEIs are useful in providing services related to online database systems in HEIs in Tanzania

**Keywords:** Usefulness of ICT Resources, ICT Resources in Academic Institutions, Status of ICT in Academic Institutions, Online Database systems, Higher Learning Academic Institutions in Tanzania

## Introduction

Online databases have been around since evolution of the World Wide Web (Brandt, 2008), and could be traced back from the Psycoloque in 1989 under the editorial of Stevan Hamad to 1992 and the Online Journal of Current Clinical Trials (OJCCI) which appeared as the first peer-reviewed scientific journal (Nwaogu & Ifijeh, 2014). As the computing technology evolved, online databases increasingly became publicly accessible with restricted access and authentication required (McFadden, Prescott and Hoffer 2008). In education sector, some projects were funded by individual states and the international organisations such as World Bank (Johnson et al., 2008) to provide access to reliable sources of educational materials. This aimed at increasing access to data from a single minority to global majority (Tyler and Hastings 2011). Recently, online

databases are used extensively in every facets of human life. This includes its use in academic institutions where they are extensively used to support core institutions activities which are academic research and consultancy.

However, for academic institutions to benefit and fully utilize online databases, they need to have reliable Information and Communication Technology (ICT) infrastructures that they can use to access online databases. For HEIs in Tanzania and elsewhere to have reliable ICT infrastructures and systems they need to heavily invest in them which is a challenge to most developing countries organizations Paterson (2007), Touray et al. (2013).

This paper therefore assesses the usefulness of available ICT resources in the facilitation of online databases access and usage in Higher learning Institutions in Tanzania.

### **Research Objective**

The study aimed at assessing the usefulness of available ICT resources in providing services related to online database systems which support core activities of higher learning institutions which are academic, research and consultancy.

### **Scope of the Study**

This paper focus on the usefulness of available ICT resources in providing services related to online database services in HEIs in Tanzania. Twelve (12) selected HEIs in Tanzania were surveyed. The study concentrated on the usefulness of ICT resources variables and excluded other variables in order to ensure manageability and comprehensiveness of the paper.

### **Literature Review**

Online databases play a significant role in higher learning institutions. It is in online databases where facilitators and students find academic and research materials. Basically, the issue is not just finding the materials – the important point is on the speed and convenience at which these materials are found and accessed.

Scholars have tried to work on online databases as demonstrated below but many have not written on the usefulness of ICT resources available to provide smooth online database services in those academic institutions. It is one thing for an academic institution to have online databases (or to subscribe to online databases) but it is another thing to ensure that staff and students in a particular institution can easily and conveniently access those online databases. For academic institutions to fully benefit from their subscriptions to online databases they should have sound and capable ICT infrastructures in place that can facilitate access and use of online databases.

ICT infrastructures are a must in the fulfilment of training, research and consultancy for the higher learning institutions in Tanzania and elsewhere as they make possible access to online databases. This is to say, in the context of Tanzania as far as usefulness of ICT systems to support online databases is concerned for higher learning institutions, fewer studies have been done on assessing usefulness of ICT systems in place which are crucial component in ensuring that access and use of online databases can be possible. Below are some studies done on online databases. Anane (2016) study on use of electronic databases by final year students of the University of Ghana college of health sciences looked at the level of awareness on electronic databases and

other electronic information resources, electronic databases used, and challenges impacting students during usage of those systems. The study found that students' awareness to online databases was 78.1% but 33.9% of the respondents did not use the electronic databases to which the College Library subscribed. Rather, students were found to use other online databases such as AJOL, EBSCOhost, ScienceDirect, Oxford Journal, and Cochrane Library. On challenges faced by students while accessing and using online databases, the following were identified: lack of guidance, download speed, Internet connectivity problems, lack of appropriate search skills, and limited access to computers, information overload, and power surges. As they can be looked at, most of these challenges are likely to face many users of internet services in a developing country because they are characterized by inappropriate infrastructures. On both level of awareness students have on online databases and challenges they face while using online databases his study agree with other studies like Kwadzo (2015) and Akinola (2018).

Online databases have made possible for data and information of various types to be easily and quickly uploaded and downloaded McLeod (2005). In his paper *why online database*, McLeod points out that any person can easily be taught how to upload and download information he/ she desires using just natural language. Untrained users can submit queries (questions - for example to search for something) to online databases using their natural languages and the database systems can process those queries and return appropriate responses to users. All these were not possible before introduction of online databases.

According to EBSCO (2011) and Blackman (2003) online database systems maximize the value of web-based environment by integrating the world's leading content into workflow by surfacing the most important relevant data. EBSCO as an online database system responds to the ever changing benchmark of sustainability and corporate social responsibility, and constantly updates the contents to reflect current practices.

To add to that, online database can enable creation of succinct reports for people by mentioning thousands of sources and ensuring access to millions of records. This simplifies for people and enables users quickly find quality articles for publications that they may not have had access to or the time to check otherwise. The articles and other publications are provided on user- friendly platforms Lyman, Peter and Hal R Varian (2003).

Kinner et al. (2009) in their paper *The Integrated Library System: From Daring to Dinosaur?* discuss the evolving role of the library services and where it could and should be headed. They argue that the World Wide Web has impacted Libraries and vendors in a way that was unimaginable just few years back as a number of services can run on the internet 24/7 days throughout a year. Expecting more changes on how library services are operating as a result of advancement in Information technology and online databases in particular, they point out that libraries should be open minded and listen to their users' demands and preferences so as to offer services according to user needs otherwise the library will turn into a dinosaur. Examples of systems mentioned to be possible as a result of internet technology are online booking systems, customer management systems, and mobile phone service provider databases.

Many scholars have written on the use and advantages of online databases in academic institutions. Some of these advantages and uses as pointed by Liu (2004), Nicholas et al. (2005) and Fabbro et al. (2008) are: extending the library collection beyond its walls, allowing library collections to be available 24/7, accessing titles you may not be able to afford alone, giving students and researchers a 'head start' for tertiary studies, accommodating the youth culture, saving time and money and meeting the standards of professional excellence for libraries. In some literature the above mentioned uses or advantages are regarded as driving force toward adoption and use of online databases in academic institutions.

It was predicted that the number of online database systems would continue to grow Kelley (2003). The reason is that its importance is at the highest peak. On the part of academic institutions, they would continue searching and collaborating with many online databases offering these services. In many cases, getting access to online database systems requires subscriptions – which in many cases require payment of subscription fees.

Subscriptions must be managed to ensure efficiency and effective use of the resources for learning purposes. According to EBSCO (2009) online subscriptions need management and authentication for every institution. Librarians need to spend sometimes in training and supporting users at institutional levels. Moreover, EBSCO encourages subscribers to use its online help sections to equip users and customers search techniques and skills so that they can effectively and efficiently use the resource.

### **Methodology**

The researcher adopted a survey study approach which enabled collecting data from a population of twelve (12) HEIs in Tanzania. Each of the twelve HEIs was equally represented in the survey. This study used both quantitative and qualitative techniques. The population of HEIs was selected to meet the research objective which is assessing usefulness of available ICT infrastructure in the provision of services related to online database usage in HEIs. From the population of HEIs in Tanzania, a sample was selected, which consisted of twelve (12) institutions.

Basically, the institutions were included in the sample based on the following; first the institution had to the researcher's knowledge adequate ICT infrastructure to offer online database services, second geographical coverage of the country, third ease and convenience of the researcher to collect data, fourth whether the institution is under National Accreditation Council for Technical Education (NACTE) and the Tanzania Commission for Universities (TCU) - a mixture of institutions under both was considered.

A sample of 660 students, and 180 academic staff was obtained. The sample consisted of 55 students, and 15 academic staff from each participating HEI.

Questionnaires and interviews were used to collect both primary and secondary data. Quantitative data from the questionnaires were analysed using SPSS (Statistical Package for Social Sciences) tool.

Interviews were used to collect insights on the collected quantitative data and were done to fewer selected key respondents.



### **Data Presentation and Analysis**

This part presents the research findings, data analysis, and the interpretation of the findings. The demographic data for the participants is provided. The part shows the research findings according to the objective. The discussion of the findings is provided thereafter. The next section is the demographic data of respondents.

### **Respondents Demographic**

A total of 595 students and 149 academic staff participated in this study, which makes a total of 744 respondents. Initially, the sample consisted of 840 respondents. This makes a total turn up of  $744/840 = 88.57\%$  of respondents.

The turn up for students was  $595/660 = 90.15\%$  and for the academic staff, the turn up was  $149/180 = 82.77\%$ . According to gender, there were 308 female equal to 41.4% and about 436 male equal to 58.6% of all participants.

### **Results and Discussion**

Objective: To evaluate usefulness of the available ICT resources for the provision of services related to online database systems in HEIs in Tanzania.

The Objective was met through six questions administered to both students and academic staff.

2 students did not answer the first question, 1 did not answer the third question, 4 did not answer the fifth question and 9 did not answer the sixth question. The second and fourth questions were answered by all 595 students. All staff (149) answered all questions.

Respondents were asked to rate each statement using the five likert scale questions (Very Poor, Poor, Average, Good, and Excellent).

The first question was on rating the usefulness of wireless internet connection at a campus in facilitating access to online databases. The findings from the students survey show 92(15.5%) said Very Poor, 51(8.6%) said Poor, 78(13.2%) said Average, 203(34.2%) said Good, and 169(28.5%) said Excellent.

On the other hand, the interview results which were carried out to 15 students show that majority of the interviewees saw the wireless as being averagely good to use for the online databases. "The wireless is not very good at all times." Source: Students Interview 2017.

The academic staff were asked to rate the usefulness of wireless internet connection at a campus in facilitating access to online databases. The findings show 9(6%) said very poor, 14(9.2%) said poor, 69(46.0%) said average, 27(18.1%) said Good, and 31(20.7%) said Excellent. The interview findings from the academic staff data show similar trends as revealed by students' data. For example, one respondent said "At campus the wireless is a bit stable than wired internet connection." Source: Academic Staff data.

The second question asked respondents to rate the usefulness of computer laboratories for internet connection at campus in facilitating access to online library databases. The findings from the students' survey show that 71(11.9%) said Very Poor, 41(6.9%) said Poor, 84(14.1%) said Average, 180(30.3%) said Good, and 219(36.8%) said Excellent. While, the findings on the same question obtained from the academic staff show 17(11.4%) said Poor, 26(17.5%) said Good, and 106(71.1%) said Excellent.

In an interview with students one of them said "The computer labs need new software, current anti-virus and free access time and free access labs." Source: Students Interview Data.

The third question asked respondents to rate the usefulness of internet connection speed at the campus in facilitating access to online library databases. From the students' survey, the findings show that 60(10.1%) said Very Poor, 54(9.1%) said Poor, 96(16.2%) said Average, 197(33.2%) said Good, and 187(31.4%) said Excellent. Apart from students, the findings from the academic staff show 6(4.1%) said Poor, 51(34.5%) said Good, and 91(61.4%) said Excellent. Despite this survey scores, the interview results showed some worries about the internet connection. One of the interviewed academic staff said "Despite the improvement made to upgrade the speed of the internet, this is not enough at times when many users are connected to the internet." Source: Academic Staff Interview Data.

The fourth question rated the usefulness of e-book library at the campus in facilitating access to online library databases. The students' survey findings show 87(14.6%) said Very Poor, 33(5.5%) said Poor, 110(18.5%) said Average, 195(32.8%) said Good, and 170(28.6%) said Excellent. On a similar question, the academic staff, the results show that 14(9.4%) said poor, 11(7.4%) said Average, 62(41.6%) said Good, and 62(41.6%) said Excellent. In some institutions, there were no e-book sections: "I know about e-book library, but we do not have one here and whether it will be installed I am not aware too." Source: Academic Staff Interview data.

The fifth question required every respondent to rate the usefulness of Library Management Systems at campus in facilitating access to online library databases. The findings from students survey show that 95(16.1%) said Very Poor, 28(4.7%) said Poor, 103(17.4%) said Average, 199(33.7%) said Good, and 166(28.1%) said Excellent.. Likewise, the findings from academic staff on the same question show that 4(2.7%) said poor, 12(8.1%) said Average, 68(45.6%) said Good, and 65(43.6%) said Excellent. On the other hand, the interview results showed similar results. For example, one of the academic staff interviewees said "We use Koha, and I use it to search for the available books in our library. It is very useful since I can access it from anywhere to renew my loans, and to check the availability of title, etc." Source: Academic Staff Interview Data.

Finally, the six question asked to students required every student to rate the usefulness of Library staff desks at campus in facilitating access to online library databases. The findings from the students survey show that 94(16%) said Very Poor, 32(5.5%) said Poor, 104(17.7%) said Average, 183(31.2%) said Good, and 173(29.6%) said Excellent. On the other hand, the findings from the academic staff on the same question show that 4(2.7%) said Poor, 14(9.4%) said Average,

32(21.5%) said Good, and 99(66.4%) said Excellent. All the HEIs surveyed had Library Services staff. The feedback about the library services was very good across all HEIs. This is evident in the interview results where both students and academic staff participated as indicated in the methodology. For example the interview with one academic staff revealed that “The library staff are strict and work professionally. They are friendly and welcome to any query.” Source: Academic Staff Interview Data. Similarly students said: “I normally get the library services as I expect.” Source: Interview Students data.

From the above results combined from students and academic staff, it is evident that the available ICT infrastructure in HEIs was highly rated as useful in facilitating access to online library database systems. The findings further suggest that despite the fact that the infrastructure available is useful in facilitating access to online databases, however, there are some components which need improvement. These include the internet connection and the presence of stable and reliable wireless internet connection in HEIs. The presence of strong, reliable, and available ICT infrastructure in HEIs is important in ensuring the value for money of the subscribed online library database systems is achieved.

### **Discussion of the Findings**

The objective evaluated the available ICT infrastructures to establish whether it is suitable to facilitate the use of online databases in higher education in Tanzania. The ICT infrastructural components evaluated included the Wi-Fi, computer laboratories, internet connection, e-book library, library management systems, and the library staff services. These were considered as important components required in facilitating access to the online databases. The results presented so far have shown that the current ICT infrastructures in HEIs are capable of facilitating access to online database systems. For example, the results have clearly shown that despite the availability of many computer laboratories in HEIs, the access to them, and the up-to-date software are issues needing attention. In other words, students want free access to the lab at any time.

Some other areas of improvement were identified too. These include the speed of the internet connection, e-book library and wireless internet connection at campuses. The results above are in similar with the results of another study conducted in Tanzania HEIs which sought to establish the capability of the ICT infrastructure in Tanzania to support the use of Collaborative Web Technologies (CWTs) in learning and teaching. In that study (Pima, Odetayo, Iqbal, & Sedoyeka, 2016) found out that the ICT infrastructure in HEIs in Tanzania was stable and capable of supporting the use of the Wikis, Blogs, Podcasts, and Social Networking Sites. These tools could be similarly used as the online databases.

Also, findings agrees with those of those of Mwantimwa et al. (2017) who looked at utilization of e-resources to support teaching and research in higher learning institutions in Tanzania. In their paper they point that e-resources are important in supporting teaching and research but face challenges such as inadequate speed of internet connectivity, power supply challenges, inadequate ICT infrastructure and inadequate skills and knowledge in using e-resources.



The findings of this study however do not agree with those of Luambano et al. (2004) who looked at the purpose for which students at the University of Dar es Salaam use the Internet services. They found that the level of students' access to the Internet was low, and the major reason was that at the time of the study, computers with Internet facilities were inadequate. They also found that students who had access to the Internet were not using it effectively. Students used the Internet mostly for communicating with friends and relatives more than for academic purposes. Lack of skills required for effective use of the internet was found to be the major cause for this. However, many years have passed from the time Luambano's study was conducted to the time this study has been done. This can be the reason for the difference.

Given the above discussion, the ICT infrastructure in HEIs in Tanzania is capable of supporting access to online databases.

## **Conclusion and Recommendations**

### **Conclusion**

The paper has provided answers to its objective which aimed at evaluating usefulness of available ICT resources for the provision of online databases in achieving the main functions of higher education institutions that includes training, research, and consultancy.

The research findings have revealed that:

The results provide sufficient evidences that the available ICT infrastructure in HEIs was highly rated as useful in facilitating access to online library database systems. All six (6) questions posed to respondents which covered wireless internet connection, computer laboratories, internet connection, e-book library, Library Management Systems, and Library staff desks their usefulness were rated higher as shown above.

However, the ICT infrastructure has some weaknesses which need improvement. The weaknesses include the internet connection and the presence of stable and reliable wireless internet connection in HEIs. The literature supports the above findings and further insists on the efforts to enhance the ICT infrastructure in HEIs and to ensure the value for money of the subscribed online library database systems.

### **Reflections and Further Studies**

The following are the recommendations and suggestions of further studies:

In relation to the objective:

1. Improve internet and wireless connection
2. Improve access to computer labs
3. Improve the design and access to e-books
4. Library staff services and library systems to be upheld.

From the foregoing, this paper provides opportunities for further research in the ICT infrastructure for online academic services in higher education learning institutions.

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