

CATCHING THE TECHNOLOGY WAVE: EDUCATIONAL BENEFITS OF DATABASES.

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Abstract

The use of databases in tertiary institutions is very important for providing opportunities for students and educators to have access to huge amounts of data for both academic and administrative purposes in this digital age. Students are however not harnessing the full benefits of databases to search for information for academic purposes. Assessing the educational benefits of databases in public universities may inform educators to design and build or subscribe to databases which are useful and beneficial to students as well as the educators themselves. The study was conducted to assess student's opinion on the educational benefits of databases in public universities. The study assessed student's level of awareness about databases, their availability, types of databases, used and the level of acceptance and satisfaction of the use of databases by students in public universities. Questionnaires were used to collect data from 90 randomly selected undergraduate students from three colleges in the University of Cape Coast consisting of, fifteen (15) level 100 students, twenty seven (27) level 200 students, thirty (30) level 300 students and eighteen (18) level 400 students. The study revealed that students were aware of different types of databases and the level of accessibility of databases was found to be on the average and had a direct effect on the levels of acceptance and satisfaction. The study recommended that universities improve on their database systems in order to improve on teaching and learning.

Keywords: Databases, Education, Awareness, Availability, Accessibility, Satisfaction

Introduction

We are in the cusp of time where databases play a major role in teaching and learning processes. The 21st century is characterized by data flood and many tertiary institutions in the world are benefiting from the use of databases to search for information for academic and administrative purposes. In the midst of various applications, data is being collected at an unimaginable scale. Decisions which were formally based on guesswork, or on painstakingly constructed models of reality, are now made based on the fact provided by the data itself. Research has revolutionized due to the existence of databases (CCC, 2011a) and this has revolutionized education (CCC, 2011b).

Databases being electronic or manual (print) have become an established component of academic institutions at all levels. The quality of databases and its availability being print and electronic

determine the quality of data produced by graduates for research development in educational institutions. Libraries being agents of educational, social and economic development have been set up for the purpose of helping individuals in educational institutions to acquire, process, store, preserve and make current and relevant print and electronic data available to meet the needs of its users.

Angelo (2010) reported that the accessibility and availability of data has increased greatly due to digitization, therefore providing data in libraries in digital form will facilitate effective search for data needed by students. This development has greatly improved students' exposure to a wider range of data or literature than would otherwise be unavailable, there are established facts that students' means of accessing data or information for research has changed tremendously within the electronic information environment.

Kwodzo (2015) asserted that there are various reasons why most students do not use databases and these include lack of awareness, preference for other sources like general search engines such as Google, poor internet search skills, poor ICT infrastructure in universities, poor downloading time, and sometimes poor attitude of students. Dukic (2013) and Ahmed, (2013b) indicated that the usage of e-databases in advanced countries is more than what pertains in the developing countries basically due to bad or poor ICT infrastructure and high cost of employing such resources. Again, Anaraki and Babalhavaeji (2013) stated that most students are not aware of the existence of e-databases but resort to general search engines to meet their information needs.

Students and researchers in public universities in Ghana have had their fair share of difficulty in accessing published research but through the benevolent initiatives of some institutions like International Network for the Availability of Scientific Publications (INASP) and Programme for the Enhancement of Research Information (PERI) in the 1990s and early 2000s, Ghanaian researchers, scholars and students in higher educational institutions have improved ways of accessing or benefiting from available databases (Kwodzo, 2015).

Anane (2016) asserted that certain concerns about the use of electronic databases and other electronic information resources (e-information resources) by students has been widely reported and the increased volume of information in electronic format compel students to learn how to search, select and use a wide variety of resources, as do the expectations for information literacy in the academic context (Ratanya, 2012). Students' ability to effectively utilize or make proper use of electronic information resources or database is a crucial issue to be discussed in higher education (Togia & Tsigilis, 2009).

In an attempt, Ghanaian public universities have implemented a consortia that purchases and makes electronic databases available in order to reduce the unit cost of these resources to their students. This has made a wide range of data available to a number of university libraries in Ghana. Now users do not necessarily visit the library to be able to benefit from the use of these resources since they can access the resources (data) from anywhere – home, office at any time. These resources are also beneficial to the large number of Distance Learners and Sandwich Students who enroll in Ghanaian universities.

The e-databases available in some universities' library systems in Ghana, consist of INASP initiatives, consortia subscribed, the universities' own subscribed and open access. They cover almost all subject areas within the humanities, social sciences, applied sciences, physical

sciences, and engineering. The databases contain full text electronic journal articles, bibliographic information, abstracts, e-books etc. and are renewed annually by subscription.

In terms of infrastructure, the universities have provided reasonable ICT facilities which enable student's access e-resources for learning and research purposes. The universities have also established ICT Directorates to harness and manage ICT facilities on the campuses. All these measures are put in place to contribute to easy access, utilization and appreciation of e-resources provided by (databases). There is a dearth in research on the level of accessibility, utilization and appreciation of e-databases and their benefits to students.

Objectives of the study

The objective of the study was to assess the level of awareness of students of the availability of databases in the university, the types used by students to search for information and the level of student's acceptance and satisfaction on the use of databases in universities.

Literature Review

Many studies have been conducted on databases in the area of awareness, usage, relevance, access, preference, orientations and training among others. Awareness of electronic resources (data) means users have information and knowledge of the resources subscribed to and when users of the data (resources) have adequate information on the resources available, they are encouraged to use them as and when the need arises. A study conducted by Angello (2010) revealed that the rate of awareness of electronic resources among livestock researchers in Tanzania was very low. Just 11 researchers (24.4%) were aware of AGORA and 5 researchers (11.1%) were aware of HINARI databases. INFORM and OARE were known to 3 researchers (6.7%) respectively and the remaining databases were known by 2 researchers (4.4%) only. The findings of Velmurugan (nd) showed positive response of awareness of faculty members of Engineering College Chennai, Tamilndu India with almost 66 respondents (62.8 %) aware of online resources whereas only 39 respondents (37.2 %) were not aware. Chirra and Madhusudhan, (2009) conducted a study to prove that users were aware and used the e-databases available to them. The study revealed that all (100%) the respondents were aware of the e-journals of the Consortium accessed. According to Hinson and Amidu's (2005), their study revealed a level of awareness of internet and its various applications to be low – with only 42% of the respondents responding positively. Most of the students reported that they had been introduced to the internet by friends or family members, whilst others had learned about it through self-initiative. Another study conducted by Moghaddam and Talawar (2008) showed a high level of internet awareness, with 98% of the respondents being positive about awareness.

Studies have revealed that users utilize databases based on their awareness, Manda (2005) and Dadzie (2005) on the other hand found that respondents were not aware of most of the e-resources provided in their respective institutions and therefore it affected their usage. For instance, Manda (2005) reported that PERI resources which were available to academic and research institutions in Tanzania received low level of utilization because potential users were not aware of the resources due to lack of publicity. Anaraki and Babalhavaeji's (2013) posited that when users (students) are not aware of the existence of e-resources (data) in their library system, the users (students) do not utilize the data in the system but fall on general search

engines to meet their information needs. They reported that only 16% of the medical students in Iran were familiar with the e-resources of the integrated digital library (IDL) portal provided to them. Ahmed (2013b) found out that postgraduate students from Bangabandhu Sheikh Mujib Medical University (BSMMU) and undergraduate students from Bangladesh University of Engineering and Technology utilised free electronic resources more than university subscribed resources because of lack of awareness of subscribed ones. Okello-Obura and Magara (2008) investigated electronic information access and utilisation of the East African School of Library and Information Science, Makerere University, Uganda. Out of the 250 targeted students, 190 responded, giving a response rate of 76%. The study discovered that users derived a lot of benefit from electronic resources, gaining access to a wider range of information and improved academic performance as a result of access to quality information. Kwadzo (2015) revealed that majority of the students consult JSTOR, AGORA, Emerald Science Direct and EIRs databases in the University Ghana library. The study further revealed that the usage of databases was encouraging, they further suggested that librarians and faculty members should promote the use of databases to students. There was an increase in the use of EIR databases in universities in developing nations and it was also found that the commonly used resources were Elsevier, EBSCO host resources, AGORA, Thomson, JSTOR, Scopus, Questia, Proquest, Emerald, DATAD Science Direct and Springer Link, DOAJ, OARE, HINARI, TEEAL, Ebrary, AJOL and MIT Open Course Ware EIRs databases than print resources in teaching, learning and research work among academic staff in Universities in Ghana (Kwadzo, 2015)

In a study by Swain & Panda (2009) with the aim of investigating the frequency of usage of electronic information resource databases among students, their findings revealed that sixty one (61) accepted using it daily, twelve (12) respondents accepted using weekly, six (6) respondents accepted using it fortnightly, five (5) respondents accepted using it once a month and three (3) respondents accepted using it rarely. Again, Kaur and Verma (2009) investigated the use and impact of electronic journals in the Indian Institute of Technology, Delhi, India on the extent of EIR databases usage out of the 825 respondents, 232 (28.12 %) did not answer the question. 11 undergraduates (5.64 %) claimed the use EIR databases daily, 30 (15.38 %) 2/3 times a week, 28 (14.36 %) once a week, and 126 (64.62 %) occasionally. Thus, the maximum number of undergraduates used EIR databases occasionally. Similarly, 41 (19.34 %) postgraduates used EIR databases daily, 83 (39.15 %) 2/3 times a week 31 (14.62 %) once a week and 57 (26.89 %) occasionally. The results showed that maximum number of postgraduates used EIR databases 2/3 times a week. Further, as many as 41 (31.78 %) research scholars used EIR databases daily 38 (29.46 %) 2/3 times a week, 15 (11.63 %) once a week and 35 (27.13 %) occasionally. Lastly, as many as 4 (7.02 %) faculty members used EIR databases daily, 46 (80.70 %) 2/3 times a week, and 7 (12.18 %) once a week.

Other studies have shown that there are various purposes for which users (students) utilize databases in the universities. Shuling (2006) performed a study involving students at Shaanxi University in China and the study revealed that students used e-resources (data) for various reasons, including writing dissertations, preparing homework and consulting material about subjects. The researcher reported that 60% of the respondents utilized the databases which the university library subscribed to. Another study conducted by Moghaddam and Talawar (2008) indicated that all the respondents who participated in the study (397) used e-journals, with research students accounting for the highest percentage (53%). The students used e-resources mostly for research, education and current information; and least for recreation and to win

awards. The study further revealed that e-journals were considered the most important part of scientific communication. In a study carried out by Manda (2005) in Tanzania it was revealed that 2 undergraduates, 13 graduates and 18 lecturers accepted using EIR databases for literature search, 1 graduate and 17 lecturers accepted that they used EIR as teaching/lecturing material. Three undergraduates and 15 graduates accepted that they use it for assignments. Sinh and Nhung (2012) argued that users' behavior will influence the usage of e-databases, and that factors that influence usage of databases are the purpose of usage, preferred types of materials, ways to learn the search, search techniques and difficulties and expectations in using the databases. Thus, in their survey on searching behavior of users of six online databases subscribed to by the Central Vietnam National University in 2011 they reported that 87.5% requested for full-text articles as compared with 12.5% who requested for abstracts.

Methodology

The study was conducted at the university of Cape Coast. A quantitative approach and descriptive research survey design were employed. 90 undergraduate students were randomly selected from three colleges in the university as follows: fifteen (15) level 100 students, twenty seven (27) level 200 students, thirty (30) level 300 students and eighteen (18) level 400 students.

Questionnaires were used for data collection to solicit for the views of students regarding the topic under study.

Results and Discussions Demographics

The distribution in terms of percentages were 16.7%, 30.0%, 33.3% and 20.0% for levels 100, 200, 300 and 400 respectively. With respect to age, out of the 30 respondents 26.7% (24 students) were below 20 years, 53.3% (48 students) were between 20 to 30 years old and 20.0% (18 students) above 30 years. With regards to gender, 53.3% were males and 46.7% were females. The results are shown below:

Table 1: Distribution of Students Population by levels.

LEVEL	RESPONDENT	PERCENTAGE
100	15	16.7
200	27	30.0
300	30	33.3
400	18	20.0
Total	90	100

Source: Field Data, 2018

Table 2: Age Distribution of students.

AGE	RESPONDENT	PERCENTAGE
Below 20	24	26.7
20 – 30	48	53.3
Above 30	18	20.0
Total	90	100

Source: Field Data, 201

Table 3: Distribution of Students by Gender

GENDER	RESPONDENT	PERCENTAGE
Male	48	53.3
Female	42	46.7
Total	90	100

Source: Field Data, 2018

Level of Awareness about Databases

In soliciting for the level of awareness of respondents about databases, findings revealed that majority of respondents had heard about databases. The result showed that, 81 (90.0%) respondents confirmed that they had knowledge about databases, on the other hand, 9 (10%) respondent showed that they were ignorant. The findings are displayed in the table below;

Table 4- Level of awareness about Databases.

DATABASES	RESPONDENTS								TOTAL	
	LEVEL								Freq	Perc
	100		200		300		400			
Freq	Perc	Freq	Perc	Freq	Perc	Freq	Perc	Freq	Perc	
AGORA	6	6.7	12	13.3	24	26.7	15	16.7	57	63.3
America Physical Society	3	3.3	3	3.3	6	6.7	9	10.0	21	23.3
America National Biography Online	0	0.0	0	0.0	9	10.0	18	20.0	27	30.0
Cambridge		6.7		6.7		13.3		16.7		

University Press	6		6		12		15		39	43.3
Duke University Press	3	3.3	3	3.3	6	6.7	6	6.7	18	20.0
EBSCO host	3	3.3	9	10.0	6	6.7	9	10.0	27	30.0
Emerald	0	0.0	0	0.0	12	13.3	12	13.3	24	26.7
Euclid Maths & Statistics Online	3	3.3	0	0.0	3	3.3	6	6.7	12	13.3
Geological Society	0	0.0	0	0.0	0	0.0	3	3.3	3	3.3
Google Scholar	6	6.7	18	20.0	24	26.7	18	20.0	66	73.3
HEINONLINE	0	0.0	0	0.0	3	3.3	0	0.0	3	3.3
HINARI	0	0.0	3	3.3	0	0.0	0	0.0	3	3.3
IEE Xplore	0	0.0	0	0.0	3	3.3	6	6.7	36	40.0
IMF e-library	3	3.3	3	3.3	18	20.0	15	16.7	39	43.3
OARE Science	3	3.3	3	3.3	3	3.3	3	3.3	12	13.3

Source: Field Data, 2018

Sources of information on knowledge about databases

Students through several means get to learn and know of online library resources through lecturers and teaching assistants (TA), library-user classes, librarians, colleague students, friends and by searching themselves (Mbabu *et al.*, 2013). Upon this finding, the researcher enquired from the sources by which students got to know about the databases. The enquiry result are shown in Table 5 below, 63 (70.0%) indicated they were taught by colleagues, 60 (66.7%) learn about the databases by themselves through their own search. Again, 54 (60.0%), 48 (53.3%) and 45 (50.0%) of the respondents learnt about databases through their lecturers/Teaching Assistants, university/library website and librarians respectively. These findings do not deviate much from the findings of Chirra and Madhusudhan (2009) where 60% and 56% of students mentioned Libraries, websites and Lecturers respectively as sources of information as cited by Kwadzo (2015).

Table 5: Source of information about databases

SOURCE	RESPONDENT								TOTAL	
	LEVEL									
	100		200		300		400		Freq	Perc
Freq	Perc	Freq	Perc	Freq	Perc	Freq	Perc			
Lecturers / TA	6	6.7	12	13.3	18	20.0	18	20.0	54	60.0
Librarians	9	10.0	6	6.7	15	16.7	15	16.7	45	50.0
University/Libr ary websites	9	10.0	15	16.7	15	16.7	9	10.0	48	53.3
Colleague students	6	6.7	18	20.0	21	23.3	18	20.0	63	70
Personal search	9	10.0	15	16.7	18	20.0	18	20.0	60	66.7

Source: Field Data, 2018

Accessibility, acceptance and satisfaction level of the databases

In an attempt to access the level of acceptance and satisfaction of these databases by respondents, respondents were asked to indicate how suitable databases were to their needs and the level of satisfaction they get from using the databases for their academic work. Responses are as shown in the Tables below:

Table 6: Level of Ease of accessibility of databases by students

ACCESSIBILTY	RESPONDENT								TOTAL	
	LEVEL									
	100		200		300		400		Freq	Perc
Freq	Perc	Freq	Perc	Freq	Perc	Freq	Perc			
Easy	6	6.7	6	6.7	3	3.3	3	3.3	18	20.0
Average	6	6.7	18	20.0	21	23.3	12	13.3	57	63.3
Poor	3	3.3	3	3.3	6	6.7	3	3.3	15	16.7
Total	15	16.7	27	30.	30	33.3	18	20.0	90	100.0

Source: Field Data, 2018

On the grounds of ease of accessibility, 20.0% indicated that databases were easily accessible, 63.3% which the majority stated that the databases were averagely accessible and 16.7% being the least said accessibility was poor. These findings could be related to internet connectivity issues.

Table 7: level of acceptance of databases by students

ACCEPTANCE	RESPONDENT								TOTAL	
	LEVEL									
	100		200		300		400			
	Freq	Perc	Freq	Perc	Freq	Perc	Freq	Perc	Freq	Perc
High	3	3.3	3	3.3	3	3.3	3	3.3	12	13.3
Average	9	10.0	18	20.0	21	23.3	9	10.0	57	63.3
Low	3	3.3	6	6.7	6	6.7	6	6.7	21	23.3
Total	15	16.7	27	30.	30	33.3	18	20.0	90	100.0

Source: Field Data, 2018

On the acceptance of databases which are available to students, considering certain factors 13.3% indicated high level of acceptance, 63.3% (majority) again stated an average level of acceptance and the remaining 23.3% said the level of acceptance was low.

Table 8: Distribution of level of satisfaction of databases by students

ACCEPTANCE	RESPONDENT								TOTAL	
	LEVEL									
	100		200		300		400			
	Freq	Perc	Freq	Perc	Freq	Perc	Freq	Perc	Freq	Perc
High	3	3.3	3	3.3	3	3.3	3	3.3	12	13.3
Average	9	10.0	18	20.0	21	23.3	9	10.0	57	63.3
Low	3	3.3	6	6.7	6	6.7	6	6.7	21	23.3
Total	15	16.7	27	30.	30	33.3	18	20.0	90	100.0

Source: Field Data, 2018

On satisfaction 13.3 % were highly satisfied, 63.3% were averagely and 23.3% was not satisfied. This was in relation with how suitable the databases were to respondents' needs

Conclusion

The study assessed the level of awareness of databases by students in public universities. Findings revealed that an appreciable number of students had knowledge about databases and were aware that the university provides access to these databases for academic purposes. The Awareness level was generally good but upon the numerous databases available to students a hand full of them were used. Thus students use the ones they were aware of, therefore students should be educated more on databases especially those that are very relevant to their subject areas. The universities through seminars, faculties and librarians should collaborate in promoting the awareness of these databases to students.

Again, accessibility of the databases was found to be at an average level due to certain factors which had a direct effect on the levels of acceptance and satisfaction. It is advised that the universities should do well to establish formidable ICT infrastructure to enhance accessibility to be able to improve satisfaction of the users of the databases.

Furthermore, faculties should recommend and direct students to these databases by listing them in reading lists and for doing assignments. This will make students very conversant with databases in their discipline and be encouraged to use them.

Future research

Databases are beneficial to students to enable them access information for their academic work. Based on the findings of the study, it is suggested that further is conducted on the level of integration of databases in Learning management systems in tertiary institutions.

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