

Full Length Research

The Effect of Internet Service on Computer Science Undergraduate Research in Universities in Benue State, Nigeria

^{1*}Dr. Igbashal, Anthony Agena, ²Dr. Tor-Akwer Helen Famaren and ³Beetseh, Kwaghga

^{1,2}Francis Sulemanu Idachaba Library, University of Agriculture Makurdi, PMB 2373.

^{1*}Corresponding author's ¹E-mail: igbash@yahoo.com, ³E-mail: famarentor@gmail.com

³University Library, Federal University of Agriculture Makurdi, PMB 2373.

E-mail: beetsekwaghga@gmail.com

Accepted 12 September 2017

The study investigated the effect of internet services on Computer Science undergraduate research in universities in Benue State, Nigeria. The study looked at the extent of availability of internet services, e-mails, World Wide Web, File Transfer Protocol and challenges that affect effective utilization of internet services. Five (5) objectives with corresponding research questions guided the study while three hypotheses were formulated. The study adopted a survey research design. The population of the study was 401 final year undergraduate students of Computer Science Department from three (3) universities in Benue State. The sample size for the study was 200 Computer Science undergraduate who were composed using proportionate stratified and simple random sampling techniques. The instrument of data collection was a self-structured questionnaire titled "Internet Services and Computer Science Undergraduate Research Questionnaire" (ISCSUSRQ) which was validated by experts. The reliability of the questionnaire was established using Cranach Alpha method and a reliability coefficient of 0.89 was obtained. Data was collected and analyzed using Means and Standard Deviation to answer the research questions and Chi-Square statistics to test the hypotheses at 0.05 level of significance. Findings of the study revealed that, Internet services such as World Wide Web, E-mails, File Transfer Protocol, Internet Chatting, Search Engines, List Servs/Discussion Groups and Telnet / Usenet are to a high extent, available for research by Computer Science undergraduate students in universities in Benue State. E-mail, World Wide Web and File Transfer Protocol has significant perceived impact on Computer Science undergraduate research in universities in Benue State. The finding also revealed that the challenges affecting effective utilization of internet services for research by Computer Science undergraduate in universities in Benue State include slow internet access speed, longer time to view/down load web pages, difficulty in finding relevant information, offline internet connectivity, electricity failure, high cost of accessing the internet, lack of computers, Low internet bandwidth and lack of internet search skills for effective search among others. The study concluded that, internet services such as E-mails, World Wide Web, File Transfer Protocol used by Computer Science undergraduate students in universities in Benue State have significant perceived positive impact on their research activities. Recommendations were made that, there should be inclusion of internet services literacy course into the general studies programme of the University to enhance students knowledge of online information for their learning and research, universities should improve on the internet wireless service connectivity as this will enhance students access without time limit or restrictions and internet laboratories which after FTP services on campus should be scheduled and made accessible to students among others.

Keywords: Effect, Internet Service, Computer Science, Undergraduate, Research and Universities

Cite This Article As: Igbashal, A.A., Tor-Akwer H. F., Beetseh, K (2017). The Effect of Internet Service on Computer Science Undergraduate Research in Universities in Benue State, Nigeria. *Inter. J. Acad. Res. Educ.* Rev. 5(4): 123-135

INTRODUCTION

In this age of information and communication technology (ICT), the use of internet in every human endeavor including research has become a norm. Developing countries like Nigeria are not exempted from this trend. The crave for internet originated from access to free online journals, magazines, books, and other information resources anytime and from anywhere for academic and research purposes (Kode and Kode, 2003).

The exponential growths of mobile computing and wireless networks and protocols have tremendously contributed to educational institutions at the forefront of changing global village of this 21st century. It is based on this consciousness that Unagha (2006) observed that the internet empowers people economically and intellectually. Internet is an unavoidable means of civic improvement when it is advantageously and conspicuously placed in the service of public education. The internet has become an essential information processing tool as people are becoming aware of its imperatives and processes (Onwubiko, 2012). In the current information age, individuals, organizations, government and nations that want to be reckoned with cannot do without the internet services.

Basically, the internet is a global network of linked computers that provides a variety of resources and data to people across the world. According to the world Almanac and Book of facts (2004), there is no aspect of the contemporary world that is more influenced by the internet than the educational system. Supporting this, Selcher as cited by Ugbagir (2011) states that, the internet is a veritable tool for academic research work especially at higher education level. According to Ani as cited by Ilo and Ifijeh (2010), Internet is a network of linked computers which are located at different points all over the world that provides easy communication between and organizations where they are located. Internet is used mostly in obtaining information, observe that internet is not a single network of computers but a network of nets, a large network that connects many smaller networks to one another. Qunqing (2004) referred internet as 'a large encyclopedia' or a library without walls for its abundant information. The strengths of internet for academic research "includes; currency of online information sources, accessibility to multimedia resources, and information that is not limited by distance or time constraints, and it enables scholars and students to at different locations on the globe to exchange ideas on various research studies. Essentially, research is based on reliable information; researchers need quick and easy access to information. Thus, the internet is very useful to higher educational institutions including the university. Internet is a product of information and communication technology, it is a collection of vast

information sources inter-linked with computer networks. It is usually referred to a network of networks that is accessible to students, scholars, researchers and lecturers in any academic environment.

Internet service provision has become a critical factor for undergraduate student's research activities especially in Nigeria where the problem of limited access to current and reliable information resources has not been adequately addressed. Internet services are defined as a generic term that encompasses all the services available on the internet. The internet has a number of services such as World Wide Web (WWW), Electronic mail (E-mail), File Transfer Protocols (FTP), Chat, Telnet, Gopher, Search engine, listserv, Usenet, Newsgroup, and others. All these applications when properly aggregated facilitate effective and efficient research work by providing access to quality and current information services and resources. The increased use of internet services for research in academic institutions worldwide means that educational researchers recognize the significance of and understand how and why undergraduate students use it. It has become a powerful means of information transmission and has been embraced by academic institutions to enhance research and academic work (Waithaka, 2013).

An internet research is the practice of using the internet, especially the World Wide Web (www) for research. Aba, Beetseh, Ogban and Umogbai, (2015) stressed that the internet helps researchers in their research work by providing enabling environment to communicate freely with colleagues scattered all over the world instantly. They can exchange knowledge and even the research finding from different locations in the world. They further explained that the presence of File Transfer Protocol and World Wide Web makes it possible to exchange visual information in readable and useable formats. For instance, charts, tables, figures, images, databases, documents and even software codes are transferred from the internet to any remote computer to read and use. These features have made research easier around the world. Some of the material resources that are found on the internet are e-journals, e-books, e-newspapers, and online databases. It is expected that with the use of internet services, resources, and the quality of resources available, the quality of researchers project work will be of good quality in Universities in Nigeria.

Research has been recognized as an indispensable tool in the professional development of any organized body or discipline including computer science. Research, as Adediji, O. O. (2012) stated, is an investigation undertaken in order to discover new facts and get additional information. Research provides the undergraduate students with a unique and enriching activity. The joys of exploration, innovation and creativity are only a few of the experiences the students go through

when performing research. Research as a concept is a purposeful search for solution to an identified problem or new knowledge. Undergraduate research came into being when the US analysis proposed that students were losing interest in their subjects because of lack of engagement in genuine research and that would be more likely to continue to postgraduate level and beyond if they were not engaged in real front-line research, rather than conventional course work (Russell, Hancoch and McCullough as cited by Ugbagir, 2010). Therefore, undergraduate research is an inquiry or investigation conducted by an undergraduate in collaboration with faculty mentor that makes an original intellectual or creative contribution to the discipline. In this study, research is defined as undergraduate student's project writing which serve as a basic requirement for the award of Bachelor of Science degree in any discipline, e.g. computer science discipline.

Use of internet services has opened new possibilities for undergraduate students in conducting research. It embraces active study skills, serves as a support to researchers that cannot purchase expensive collection of books and serves as a learning zone where facts and information can be obtained in a Wide variety of contexts. Traditionally, research project is not just an expectation but a must for every university student in his/her final year in the university. The reason for this is because, it marks the culminating point in student's completion of a degree programme in the university. Before the advent of the internet, university students carried out research using library, printed and audiovisual materials (Aina, 2004). But with the invention of the internet, much more research

is conducted using internet services by students, computer scientists and researchers (Adediji, 2012). This is because, there are useful academic resources available on the internet, including volumes of online journals and site set up by universities and scholarly scientific organizations.

Nigerian university computer science undergraduate are required to carry out research projects in their final year in the university. Project writing is a major pre-requisite for the award of degrees in tertiary institutions in Benue state and Nigeria at large. Every undergraduate considers project writing important to his or her academic success. Research project writing involves a student or group of students carrying out a study on a topic of interest. When the project is completed, it is evaluated by the quality of the work submitted within a stipulated time (Fatoki, 2004). It is used to indicate the student's ability to select, research, and draw logical conclusion from the findings. The quality of the research project is to a large extent dependent on "the quality, quantity, and regency of the resources consulted and cited (Ilo and Ifijeh, 2010).

Computer science is the study of computers and computational system. The Bachelor of Science Degree

programme in computer science is been offered as a course in the department of computer science in the three Universities under study with full accreditation from the National Universities Commission (NUC). The programme is designed to impact appropriate skills, knowledge, behavior and attitude as well as advance frontiers of knowledge, via ICT, that are relevant to the national and global development. In essence, it is designed to meet the academic standard required for a computer science graduate and the demands of Information and Communication Technology.

Undergraduate, according to Cambridge Dictionary Online, is a student who is studying for his/her first degree at college or University. Similarly, undergraduate student is one who has not yet received a Bachelor's degree. In project writing, computer science undergraduate use internet services in areas of problem identification, research topic, background information, literature review, data collection and analysis.

Undergraduate use of internet services depends partly on how Universities are providing internet facilities such as computers, bandwidth (flow of information), databases and provision of basic internet skills of surfing the web as well as creating awareness of internet services to meet their information needs. Agomnuo, (2000), reported that undergraduate students visits to libraries and information centers for research is frustrating due to inadequate internet facilities and lack of basic internet skills to exploit internet resources.

The mission of University libraries in Benue state is to provide relevant and appropriate information resources, sharing resources and online access to World Wide Web (WWW). ICT internet facilities in the Universities enable students to access online resources for research. The university libraries in Benue state established library and information networks connected through the university campus local network which lecturers and students use for research and other academic works. The Tertiary Education Trust Fund (TETFUND) has also embarked on the provision of Virtual libraries for some universities in Nigeria and even the National Universities Commission (NUC) committed to providing ICT facilities in different formats to University students to enhance their academic performance and research productivity by making information readily available through the net where they can get information resources to support teaching, learning and research process in the university system. Through the internet there is access to bibliographic and full text database, library catalogue, online newspapers, magazines, constitutions of various countries and electronic comments (Ugbagir, 2011). With these laudable efforts, it is expected that computer science undergraduate in universities in Benue state would make use of internet services when writing their research projects in their final year of study. It is noticed that the universities understudy though have internet services in

their libraries, their undergraduate rarely use them for their research studies which resulted to poor quality of the final year research projects. Could it be that this action is as a result of lack of awareness or do internet services have an impact at all on undergraduate researches. This is the reason why the researcher intends to carry out this investigation. Therefore, there is need to critically examine the perceived impact of internet services on undergraduate research. A detail understanding of this impact would provide necessary information and guide towards providing a more effective and sustainable internet services that can serve the research needs of undergraduate students better. It is against this background that this study seeks to investigate the perceived impact of internet services on Computer Science Undergraduate research in universities in Benue State, Nigeria.

STATEMENT OF THE PROBLEM

The internet has increasingly become an invaluable assets in education, information handling, packaging, storage, retrieval and dissemination. Internet services provision has become a critical factor for computer science undergraduate research project writing in Nigeria where the problem of limited access to current and reliable information resources has not been adequately addressed. The internet has really helped in conducting a good research, enhance the academic performance of students and easy dissemination of information in the 21st century. It has opened up new possibilities for sharing of resources and ideas for research locally and globally and that information on latest journals, books and discussions with other researchers across the world can be exchanged directly through the services available on the internet. The use of internet (if maximized) plays a major role in helping undergraduate researcher's access large number of materials from different part of the globe for research studies.

Available, easy access and properly used internet services could enhance the quality of research of final year computer science undergraduate. It introduces new ideas and thought, widens the knowledge horizon of students, reduces the tendency for blind copying, plagiarism as well as duplication of research results that would not be generally acceptable and acclaimed.

In recent years, the government through the Tertiary Education Trust Fund (TETFUND) and National Universities Commission (NUC), University administrators, the University libraries, and other stakeholders in the university system have embarked on provision of internet services in libraries and other information centers in universities for easy accessibility to current information resources to enhance research in Nigeria. University libraries in Benue State subscribed to

several databases such as AGORA, HINARI, AJOL, EBSCO host, JSTOR, Encyclopedia Britannica, EBSCO host professional development, EMERALD, ACCESS, Science by McGraw Hill, GALE SCIENCE in context and Nigerian Virtual Library. It is expected that with this laudable effort, computer science undergraduate would make use of internet services as one of the most vital sources of information for research. However, Aina (2004) has raised alarm about the high rate of poor academic performance and quality of research project works of final year undergraduate in universities in Nigeria.

It has been noticed that the universities understudy though have internet services in their libraries. However, their computer science undergraduate rarely use them for their research studies. Could it be that internet services has no perceived impact at all on undergraduate researches? This has prompted this researcher to investigate and fill the gap. Even though most computer science undergraduate pride themselves as being computer literate, the fact remains that some are yet to know the impact of internet service, use of relevant search engines to access online journals and electronic books for research. Studies on use of internet services by students for research has been carryout in Benue state and Nigeria at large but none of this studies focuses on perceived impact of internet services on computer science undergraduate research in universities in Benue state. This has created a gap in knowledge which the study attempt to fill.

Although, most scholars claimed that internet services has a perceived impact on undergraduate research and yet there is no systematic empirical evidence to that effect. It has been found that studies relating to this area were scanty and no similar study has been carried out in Benue state to the best knowledge of this researcher. Therefore, the problem of this study is to find out perceived impact of internet services on computer science undergraduate research in universities in Benue state.

OBJECTIVE OF THE STUDY

The objective of this study is to find out the effect of internet services on computer science undergraduate research in universities in Benue State. Specifically, the study sought to:

- i. Ascertain the extent of availability of internet services for research by undergraduate of computer science in universities in Benue State
- ii. Find out the perceived impact of E-mail on computer science undergraduate research in universities in Benue State
- iii. Determine the effect of World Wide Web on computer

- science undergraduate research in universities in Benue State
- iv. Determine the effect of File Transfer Protocol on computer science undergraduate research in universities in Benue State
 - v. Identify challenges that affect the effective utilization of internet services for research by computer science undergraduate in universities in Benue State

Research Questions

The study sought answers to the following research questions:

- i. To What extent are internet services available for research by computer science undergraduate in universities in Benue State?
- ii. What is the effect of E-mail on computer science undergraduate research in Universities in Benue State'?
- iii. What is the effect of World Wide Web on computer science undergraduate research in universities in Benue State?
- iv. What is the effect of File Transfer Protocol on computer science undergraduate research in universities in Benue State?
- v. What are the challenges that affect the effective utilization of internet services for research by computer science undergraduate in universities in Benue State?

Statement of Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

- i. E-mail has no significant effect on computer science undergraduate research in universities in Benue State.
- ii. World Wide Web has no significant effect on computer science undergraduate research in universities in Benue State
- iii. File Transfer Protocol has no significant effect on computer science undergraduate research in universities in Benue State.

METHODOLOGY

Research Design

The study adopted a survey research design. Aguolu and Aguolu, (2003) opines that survey research design is

the commonest way of gathering information by seeking the opinions of individuals and consensus which is expected to provide solution to the problem. This design was considered suitable for the study because the design allows for a representative sample through field research and is relatively easy and practical. The use of survey research design is justified because it is found to be most appropriate for this study which directly sought computer science undergraduate students' opinions on perceived impact of internet services on research in universities in Benue state, Nigeria.

Area of the Study

The study was conducted in Benue State. Benue State is one of the 36 states in Nigeria and one of the six states in north central geopolitical zone. The state has Makurdi as its capital. It stretches approximately between longitude 7° 47` and 10°0` East and Latitude 6°25' and 8°8' North with an annual average relative humidity of 60%. The state is bounded in the North by Nasarawa and Taraba state, in the south by Ebonyi, and Cross River States as well as the republic of Cameroon; in the East by Enugu state, and in the West by Kogi state. Benue occupies a landmass of 34,059 Square Kilometers.

For educational and administrative purposes the state is divided into three educational zones, they are; Zone A, Zone B and Zone C. Zone A comprises of seven (7) Local Government Areas, Zone B comprises of seven (7) local government areas and Zone C comprises of nine (9) local government areas respectively (Wikipedia, 2016).

The study covers three Universities in the state: Federal university of Agriculture, Makurdi, Benue State University, Makurdi," and University of Mkar, Mkar. The study chooses Benue State because all Universities in the state are offering computer science program at undergraduate level and no research has been carried out on perceived impact of internet service on computer science undergraduate research in the study area.

Population of the study

The population for this study was made up of 401 final year undergraduate students of computer science department from three (3) universities in Benue State, Nigeria. The population includes University of Agriculture, Makurdi (283), Benue State University, Makurdi (111) and University of Mkar (7), (Office of the HODs, Admission and Registration Records of each University, 2018). The choice of final year students is because this is the foundation level of research for becoming computer scientists and professionals.

Sample and sampling techniques

The sample size for the study was 200 Computer Science undergraduate. This was determined using Taro Yamene's formula for sample size determination. Proportionate Stratified Sampling technique was first used for the overall sample size of 200 undergraduate in the departments of computer science into three strata; University of Agriculture, Makurdi (141), Benue State University, Makurdi (55) and University of Mkar (4) respectively. This was to avoid bias in the distribution of the questionnaire to the respondents. Simple random sampling technique was then used to select actual sample in each stratum by selecting respondents at random without replacement from the population in each university that equate the overall sample. Simple random sampling technique was chosen because it gives every member of the population an equal opportunity to be chosen. Simple random sampling was used to select the needed sample size in each of the universities. The choice of using simple random. According to Emaikwu (2015), each element of the population has equal and independent chance of being included in the sampling. Having an independent chance of being included implies that the chance of drawing an element does not depend on or is not affected by drawing of another element.

Instrument of Data Collection:

The instrument of data collection for this study was a self-structured questionnaire. The questionnaire was titled "Internet Services and Computer Science Undergraduate Research Questionnaire". The questionnaire was based on the five (5) research questions and the review of literature. The questionnaire was used to elicit information on perceived impact of internet service on computer science undergraduate research. With regards to response mode and rating of instrument, the questionnaire had rating weights of 4,3,2, and 1 respectively for response modes of Very Great Extent (VGE), Great Extent (GE), Low Extent (LE), Very Low Extent (V LE) for section A, and Strongly Agree(SA), Agree(A), Disagree (D), Strongly Disagree(SD) for sections B, C, D and E respectively.

The questionnaire contains 54 items and was divided into five (5) sections labeled sections A, B, C, D, and E. Section A contain ten (10) items soliciting information on the extent of availability of internet services for research by computer science undergraduate in universities in

Benue State; section B contain ten (10) items seeking information on perceived impact of E-mail on computer science undergraduate research in universities in Benue State; section C contain ten(10) items soliciting information on perceived impact of World Wide Web on computer science undergraduate research in universities in Benue State; Section D contain ten (10) items soliciting information on Perceived impact of File Transfer Protocol on computer science undergraduate research in universities in Benue State; and finally, section E contain fourteen (14) items to identify challenges that affect the effective utilization of internet services for research by computer science undergraduate in universities in Benue State. This brings the total number of items in Sections, A, B, C, D, and E, to 54.

Method of Data Collection

To ensure high percentage return, the questionnaire was personally administered by the researcher with the help of two research assistants from each of the universities under study. Two days before sending copies of the questionnaire, the researcher contacted research assistants in each of the universities under study on phone to get them informed and prepared for the exercise. Subsequently, the researcher visited the universities under study with 200 copies of the structured questionnaire accompanied with self-addressed envelope and personalized cover letters of introduction from the researcher which explained the aim of the study. These were handed to the research assistants to be administered to the respondents. After a Week, the researcher phoned the research assistants to ensure that the completed copies of the questionnaire are collected and also, to find out if there were lapses and problems in the distribution of the questionnaire to the respondents. Before embarking on the exercise, the researcher made administrative arrangement to secure approval and support of the Universities and the computer science departments. The whole of the exercise lasted for one month.

RESULTS AND DISCUSSION

This chapter is concerned with data presentation, analysis, interpretation and discussion of findings. The presentation follows the sequence of the research question and hypotheses that guided the study.

Results

Research Question One: To what extent are internet services available for research by computer science undergraduate in universities in Benue State?

To answer this research question, data on the extent to which internet services available for research by computer science undergraduate in universities in Benue State were collected and analyzed as presented on table 1.

Table 1. Mean and Standard Deviation of the Extent to which Internet Services available for Research by Computer Science Undergraduate in University in Benue

S/No	Items Statement	N	Mean (X)	Std. Dev	Decision
1.	World Wide Web	200	3.05	.87	High Extent
2.	Email	200	3.34	.91	High Extent
3.	File Transfer Protocol (FTP)	200	3.01	.83	High Extent
4.	Bulletin Board Services	200	2.44	.78	Low Extent
5.	Newsgroups	200	2.39	.90	Low Extent
6.	Internet Chatting	200	2.39	.92	High Extent
7.	Search Engines	200	3.22	.88	High Extent
8.	List Servs/Discussion Groups	200	2.99	.87	High Extent
9.	Telnet/Usenet	200	2.87	.79	High Extent
10.	Gopher	200	2.39	.80	Low Extent

Source: Field Work (2015)

N = Number of Respondents

Table 1 shows the extent to which internet services are available for research by Computer Science undergraduate students in universities in Means and Standard Deviations. From the table as indicated by the respondents item 1, item 2, item 3, item 6, item 7, item 8 and item 9 have Mean values of 3.05, 3.34, 3.01, 2.89, 3.22, 2.99 and 2.87 "respectively which are above the benchmark of 2.50. This showed the internet services are to a high extent available for research by Computer Science undergraduate students in universities in Benue State. Also as indicated by the respondents, item 4, item 5 and item 10 have Mean values of 2.44, 2.39 and 2.39 respectively which are below the benchmark of 2.50. This showed that the internet (Bulletin Board Services, Newsgroup and Gopher) services are to a low extent available for research by Computer Science undergraduate students in universities in Benue State. The table also reveals standard deviation values with close ranges from .78 - .92 which shows the homogeneity of the responses obtained from the respondents.

Research Question Two: What is the effect of email on Computer Science undergraduate research in universities in Benue State?

To answer this research question, data on the effect of email on Computer Science undergraduate research in universities in Benue State were collected and analyzed as presented on table 2.

Table 2. Mean and Standard Deviation of the effect of Email on Computer Science Undergraduate Research in Universities in Benue State

S/No	Items Statement	N	Mean (X)	Std. Dev	Decision
11.	It facilitates academic/research information needs of students	200	3.04	.87	Effect
12.	Students use email to gather data for their research through online interview	200	2.96	.90	Effect
13.	It distracts students from understanding the research process	200	2.39	.87	No Effect
14.	It enhances and facilitates offline social interaction	200	3.21	.88	Effect
15.	Students get access to multimedia sources via email for research	200	3.11	.78	Effect
16.	Excessive use brings social isolation, depression, loneliness and introverted	200	2.40	.83	No Effect
17.	It enhances students' skills and capabilities in research	200	2.80	.92	Effect

Table 2. continuation

18.	It encourages students to share research materials, ideas, knowledge, experiences and cultural practices with other students.	200	2.79	.91	Effect
19.	It enhances students' visual processing of information	200	3.02	.80	Effect
20.	Students get physical pains due to its heavy usage	200	2.22	.78	No Effect
Grand Mean			2.79	.86	Effect

Source: Field Work (2015)

Table 2 shows the effect of Email on Computer Science undergraduate research in universities in Means and Standard Deviations. Results in table 2 shows that only three (3) out of the ten (10) items has no perceived impact of Email on Computer Science undergraduate research with mean score ranges between 2.22-2.40 (i.e. "items 13, 26 and 20) which are below the benchmark of 2.50. Others (item 11, 12, 14, 15, 17, 18 and 19) have mean score ranges between 2.79-3.21 which are above the benchmark of 2.50, indicating the effect of email on Computer Science undergraduate research. The table also reveals standard deviation values with close ranges from .78-.92 showing the homogeneity of the responses obtained from the respondents. The grand mean of all the items was revealed to be 2.79 and SD = .86. This shows that there is a high effect of email on Computer Science undergraduate research in universities in Benue State.

Research Question Three: What is the effect of World Wide Web on Computer Science undergraduate research in universities in Benue State?

To answer this research question, data on the effect of World Wide Web on Computer Science undergraduate research in universities in Benue State were collected and analyzed as presented on table 3

Table 3. Mean and Standard Deviation of effect of World Wide Web on Computer Science Undergraduate Research in Universities in Benue State

S/No	Items Statement	N	Mean (X)	Std. Dev	Decision
21.	It facilitates students academic/ research information needs	200	3.11	.80	Effect
22.	Students use email to gather data for their research through online interview	200	2.80	.79	Effect
23.	It distracts students from understanding the research process	200	3.00	.94	Effect
24.	It enhances and facilitates offline social interaction	200	2.98	.91	Effect
25.	Students get access to multimedia sources on the WW for literature Review	200	2.77	.88	Effect
26.	Excessive use brings social isolation, depression, loneliness and introverted	200	2.41	.87	No Effect
27.	It enhances students' skills and capabilities in research	200	3.01	.90	Effect
28.	It facilitates students' interactive information sharing for research	200	2.91	.84	Effect
29.	It enhances visual processing of information	200	3.22	.80	Effect
30.	It provides solitary communication and social interaction	200	2.76	.77	Effect
Grand Mean			2.90	.85	Effect

Source: Field Work (2015)

Table 3 shows the effect of World Wide Web on Computer Science undergraduate research in universities in Means and Standard Deviations. Results in table 3 shows that only one (1) out of the ten (10) items has no effect of World Wide Web on Computer Science undergraduate research with mean score of 2.41 (i.e. item 26) which is below the benchmark of 2.50. Others (item 21, 22, 23, 24, 25, 27, 28, 29 and 30) have mean score ranges between 2.76-3.22 which are above the benchmark of 2.50, indicating a perceived impact of World Wide Web on Computer Science undergraduate research. The table also reveals standard deviation values with close ranges from .77-.94 showing the homogeneity of the responses obtained from the respondents. The grand mean of all the items was revealed to be 2.90 and SD = .85. This shows that there is a high effect of World Wide Web on Computer Science undergraduate research in universities in Benue State.

Research Question Four: What is the effect of File Transfer Protocol on Computer Science undergraduate research in universities in Benue State? To answer this research question, data on the effect of File Transfer Protocol on Computer Science undergraduate research in universities in Benue State were collected and analyzed as presented on Table 4.

Table 4. Mean and Standard Deviation of effect of File Transfer Protocol on Computer Science Undergraduate Research in Universities in Benue State

S/No	Items Statement	N	Mean (X)	Std.. Dev	Decision
31.	It facilitates students academic/ research information needs	200	3.21	.89	Effect
32.	It facilitates the transfer of research results effectively.	200	2.90	.81	Effect
33.	It provides efficient and reliable data transmission services for research	200	3.10	.80	Effect
34.	It facilitates the exchange of research materials.	200	3.11	.79	Effect
35.	Students get access to multimedia sources using FTP for research	200	2.87	.91	Effect
36.	Excessive use brings social isolation, depression, loneliness and introverted	200	2.43	.90	No Effect
37.	It enhances students' skills and capabilities in research	200	2.99	.80	Effect
38.	It enables students to download software for data analysis	200	3.23	.88	Effect
39.	It enhances visual processing of information	200	2.78	.93	Effect
40.	It facilitates downloading of files for literature Review	200	3.22	.86	Effect
Grand Mean			2.98	.86	Effect

Source: Field Work (2015)

Table 4 shows the effect of File Transfer Protocol on Computer Science undergraduate research in universities in Means and Standard Deviations. Results in table 4 shows that only one (1) out of the ten (10) items has no effect of File Transfer Protocol on Computer Science undergraduate research with 'mean score of 2.43 (i.e. item 36) which is below the benchmark of 2.50. Others (item 31, 32, 33, 34, 35, 37, 38, 39 and 40) have mean score ranges between 2.78-3.23 which are above the benchmark of 2.50, indicating a perceived impact of File Transfer Protocol on Computer Science undergraduate research. The table also reveals standard deviation values with close ranges from .79-.93 showing the homogeneity of the responses obtained from the respondents. The grand mean of all the items was revealed to be 2.98 and SD= .86. This shows that there is a high perceived impact of File Transfer Protocol on Computer Science undergraduate research in universities in Benue State.

Research Question Five: What are the challenges that affect the effective utilization of internet services for research by computer science undergraduate in universities in Benue State?

To answer this research question, data on the challenges that affect the effective utilization of internet services for research by computer science undergraduate in universities in Benue State were collected and analyzed as presented on table 5.

Table 5. Mean and Standard Deviation of the Challenges that affect the Effective Utilization of Internet Services for Research by Computer Science Undergraduate Research in Universities in Benue State

S/No	Items Statement	N	Mean (X)	Std. Dev	Decision
41.	Slow internet access speed	200	3.22	.91	Challenge
42.	Longer time to view/download web pages	200	3.41	.89	Challenge
43.	Difficulty in finding relevant information	200	3.01	.80	Challenge
44.	Privacy problem	200	3.12	.83	Challenge
45.	Internet connectivity always off	200	2.98	.83	Challenge
46.	Electricity failure	200	3.52	.79	Challenge
47.	Data authenticity	200	3.20	.91	Challenge
48.	High cost of accessing the internet	200	2.80	.89	Challenge
49.	Lack of computers	200	3.45	.90	Challenge
50.	Low internet bandwidth	200	3.27	.91	Challenge
51.	Delay payment on host site	200	3.14	.88	Challenge
52.	Lack of internet search skills for effective search	200	3.42	.87	Challenge
53.	Lack of awareness on existence of specific e-resources	200	3.11	.78	Challenge
54.	Low level of ICT services for user	200	3.21	.92	Challenge
Grand Mean			3.20	.87	Challenge

Source: Field Work (2015)

N = Number of Respondents

Table 5 shows the challenges that affect the effective utilization of internet services for research by Computer Science undergraduate in universities Means and Standard Deviations. The result indicates that all the items with Mean score ranges between 2.80-3.52 which are above the benchmark of 2.50 are the challenges affecting effective utilization of internet services for research by Computer Science undergraduate in universities in Benue State. The table also reveals standard deviation values with close ranges from .78-.92 showing the homogeneity of the responses obtained from the respondents. The grand mean of all the items was revealed to be 3.20 and SD = .87.

Hypothesis One: E-mail has no significant effect on Computer Science undergraduate research in universities in Benue State.

Table 6. Chi-Square Test of the effect of Email on Computer Science Undergraduate Research in Universities.

	Df	χ^2_{cal}	Sig.	Alpha Level	Remark
Pearson Chi-Square	27	1741.062	.000	0.5	Significant
Number of Valid Cases		200			

P < .05

Table 6 shows the Chi-square calculated value of 1741.062, degree of freedom df = 27 and a sig (P-value=0.00) which is less than the alpha value ($\alpha = .05$). Since $P < .05$, the result is significant, therefore the null hypothesis is rejected. This implied that, E-mail has significant effect on Computer Science undergraduate research in universities in Benue State.

Hypothesis Two: World Wide Web has no significant effect on Computer Science undergraduate research in universities in Benue State.

Table 7: Chi-Square Test of the effect of World Wide Web on Computer Science Undergraduate Research in Universities

	Df	χ^2_{cal}	Sig.	Alpha Level	Remark
Pearson Chi-Square	27	1982.556	.000	0.5	Significant
Number of Valid Cases		200			

P < .05

Table 7 shows the Chi-square calculated value of 1982.556, degree of freedom $df = 27$ and a sig (P-value=0.00) which is less than the alpha value ($\alpha=0.05$). Since $P < 0.05$, the result is significant, therefore the null hypothesis is rejected. This implied that, World Wide Web has significant effect on Computer Science undergraduate research in universities in Benue State

Hypothesis Three: File Transfer Protocol has no significant effect on Computer Science undergraduate research in universities in Benue State.

Table 8: Chi-Square Test of the effect of File Transfer Protocol on Computer Science Undergraduate Research in Universities.

	Df	χ^2_{cal}	Sig.	Alpha Level	Remark
Pearson Chi-Square	27	1276.853	.000	0.5	Significant
Number of Valid Cases		200			

$P < .05$

Table 8 shows the Chi-square calculated value of 1276.853, degree of freedom $df=27$ and a sig (P-value=0.00) which is less than the alpha value ($\alpha=0.05$). Since $P < 0.05$, the result is significant, therefore the null hypothesis is rejected. This implied that, File Transfer Protocol has a significant effect on computer science undergraduate research in universities in Benue State.

DISCUSSION OF FINDINGS

Based on the findings derived from the results of the study, the following were discussed:

Findings of the study as shown on table 1 revealed that, most of the internet services such as World Wide Web, E-mails, File Transfer Protocol, Internet Chatting, Search Engines, List Servs/Discussion Groups and Telnet /Usenet are to a high extent, available for research by Computer Science undergraduate students in universities in Benue State. This is evident in that the students on average responded "high extent" to the items addressing these internet services with mean values above the benchmark of 2.50. This finding corroborate that of Ilo and lifjeh (2010) whose study on the study on impact of internet on final year student's research reported that the most available internet services for student's research are, e-mail, WWW, File Transfer Protocol and Internet chat among others. The finding also corroborates that of Fasae and Aladeniyi (2012) whose study on E-mail and WWW use by student of faculty of science in two Nigerian universities reported that e-mails and World Wide Web were most available and major internet services mostly utilize by the respondent. The finding however disagree with that of Chifwepa (2003), who reported that undergraduate students' visits to libraries and information centers for research is frustrating due to inadequate internet services and facilities. The present study reported adequate internet services for undergraduate students in contrast to the report of Chifwepa (2003). The finding also disagrees with that of Bola and Ogunlade (2012) who reported lack of availability and access to internet services by graduate

students. The present finding as observed could be that that internet is becoming increasingly available to most Nigerians and especially undergraduate students due to the provision of internet services by various mobile telecommunications operations.

Findings of the study as shown on table 2 revealed that that E-mail has significant effect on Computer Science undergraduate research in universities in Benue State. This is evident in that, the students agreed to seven items out of the 10 items on the perceived impact of e-mail on undergraduate students' research with a grand Mean of 2.79 which is above the benchmark of 2.50. The respondents agreed to items such as: emails facilitates academic/research information needs of students; students use email to gather data for their research through online interview; it enhances and facilitates offline social interaction; Students get access to multimedia sources via email for research; It enhances students' skills and capabilities in research; it encourages students to share research materials, ideas, knowledge, experiences and cultural practices with other students and it enhances students' visual processing of information. A test of related hypothesis as shown on table 6 revealed a significant perceived impact of e-mails on undergraduate students' research in universities.

This finding corroborate with that of Ogunbote (2008) whose study on the impact of the internet services on study and research activities of students reported that the internet services (e-mails inclusive) have a significant effect on research activities among University students. The finding also corroborate that of Jacobsen and Forste (2011) who asserted that undergraduate students who use E-mail services purposely to support and enhance their learning reported a higher academic achievement in

terms of extensive research. In a similar vein, the finding agrees with that of Nwokedi (2007) whose study on impact of internet use on teaching and research activities of the academic staff of faculty of medical sciences reported that most academic staff use the email facility to communicate with other researchers in other universities for academic activities like conferences, sending of their research work for publication in journals and collaborative works. The finding is also in agreement with that of Iwwighreweta and Igere (2014) who submitted that with the help of the email, students are better prepared for their research project writing. Furthermore, the finding agree with that of Baro and Fyneman (2012) whose study on availability and use of E-mail services by the undergraduate students reported that that undergraduate students use the E-mail services for their academic and research work. The fact that no available literature disagree with this finding is a confirmation that e-mail services plays a significant role for research activities of the undergraduate students in universities in Benue State.

REFERENCES

- Aba, J. ., Beetseh, K., Ogban, O.O., & Umogbai, M. E. (2015). The use of Internet Services by Postgraduate Students for Research in Francis Idachaba Library, University of Agriculture, Makurdi. *IOSR - Journal of Research and Method in Education*. 5 (1), 15-23.
- Adediji, O. O. (2012). Information Sourcing on the Internet. In Olanlokun and Salisu (eds). *Libraries and Librarianship in Nigeria*. Lagos: Ikofa Press Limited.
- Adediji, O. O. (2012). Information Sourcing on the Internet. In Olanlokun and Salisu (eds). *Libraries and Librarianship in Nigeria*. Lagos: Ikofa Press Limited.
- Agomnuo, R. (2000). Internet use for Research among African—American Colleges Students. London: ELBS.
- Aguolu, C.C. & Aguolu, I.E. (2003). Libraries and Information Management in Nigeria: Seminar Essays on Themes and Problems. Maiduguri: Ed-Linform Services.
- Aina, L.O. (2004). Library and Information Science Text for Afiica. Ibadan: Sam-Adex Printers.
- Baro, E.E & Fyneman, B. (2012). Availability and use of E-mail by the Undergraduate Students of Niger Delta University, Bayelsa State, Nigeria. *Journal of Library and Information Science and Technology*. 2 (1): 62-80.
- Bola O. O. & Ogunlade 0.0 (2012). Accessibility and utilization of internet service by undergraduate students in University of Lagos, Nigeria. *International Journal of Humanities and Social Science*, 2(7):254-258.
- Chifwepa, V. (2003). The use of Internet by Teaching Staff of the University of Zambia. *African Journal of Archive and Information Science*. 13 (2), 119-132.
- Emaikwu, S.O (2015). Fundamentals of Research Methodology and Statistics. Makurdi: Selfers Academic Press Limited.
- Fasae, J .K & Aladeniyi, F.R. (2012). The use of E-mail and World Wide Web by Students of Faculty of Science in Two Nigerian Universities. *Library Philosophy and Practices*. Retrieved 24th June, 2016 on <http://unllib.unl.ed/lpp>.
- Fatoki, O.C. (2004). Impact of Library Resources and the Internet on Undergraduate Students Research, University of Ibadan, Nigeria. *Nigerian Libraries*. 38 (1): 21-33.
- Ilo, P.I & Ifijeh, G.I. (2010). Impact of the internet on final year student's research: A case study of Covenant University, Ota, Nigeria. *Library Philosophy and Practice*. Available on <http://www.webpages.uidao.edu/mbolin/ilo-ifijeh.htm>. Retrieved 10th June.
- Iwwighrehweta, O. & Igere, M.A (2014). Impact of the internet on academic performance of students in Tertiary institutions in Nigeria. *Journal of information and knowledge management*, 5(2):47-56.
- Jacobsen, W.C, & Forste, R. (2011). The wired generation: academic and social outcomes of electronic media use among university students. *Cyber psychology, Behaviour, and social Networking*, 14 (5): 275-280.
- Kode, S., & Kode, A. (2003). Free online Serials in the Area of Library and Information Science. *Annals of Library and Information Studies*. 50 (4): 146-152. Available: <http://www.niscair.res.in/>
- Nwokedi, V.C. (2007). Impact of internet use on teaching and research activities of the academic staff of Faculty of Medical sciences, University of Jos: A case study. *Gateway Library Journal*. 10(1), 13-22.
- Ogunbote, K.O. (2008). Impact of the internet services on study and research activities of students in Olabisi Onabanjo University, Nigeria. *Journal of Library and Information Science (JOLIS)*. 5(1&2), 117-127.
- Onwubiko, C.P.C. (2012). Impact of the Internet on Research Effort of Academics at Abia State University, Uturu. *Library Philosophy and Practice*. Available on <http://digitalcommons.Un1.edu/libphi/prac/835>. (24th-June, 2016).
- Qunquing, H. (2004). Reading outside the Library: How the Internet has affected reading in China. *Information Development*.20:182-188.
- Ugbajir, N.N. (2011). Undergraduates Students use of Internet Resources for Research Project in Universities in North-Central Zone of Nigeria. University of Nigeria Nsukka Phd Thesis. (Unpublished).
- Unagha, A.O. (2006). Towards an Information and Communication Technology-Conscious Nigerian Society. *The Research Librarian*. 1 (1).
- Waithaka, M.W. (2013). Internet use among University students in Kenya: A case Study of the University of Nairobi. (Unpublished Master's Thesis), University of

South Africa.
Wikipedia (2016). History of Benue State. Available on
en.m.wikipedia.org/wiki/Benue-state. Retrieved 23rd
December, 2016.