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CHALLENGES OF UTILIZATION OF ONLINE INFORMATION RESOURCES BY UNDERGRADUATE STUDENTS: IMPLICATIONS FOR INFORMATION SERVICES

By

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Abstract

The purpose of this study is to explore the direct and indirect factors underlying the students' challenges with the use of online information resources in the University of Nigeria, Nsukka and propose the implications of these challenges. This study used qualitative descriptive inductive content analysis that enabled the researchers to reveal who said what with respect to the research questions. Data were collected from a total of two hundred third year undergraduate students who visited the university library between September, 30, 2015 and March 31, 2016. The data collection was done through a questionnaire developed by the researchers. While the demographic information of the participants was illustrated in descriptive statistics, qualitative data were analyzed through inductive content analysis to represent participants' views on each of the research questions. The results revealed that few online resources were widely used and that the participants preferred accessing these resources from Cyber cafes. The greatest of the direct factors underlying students' challenges with the use of online information include lack of browsing skills, low internet bandwidth and insufficient ICT infrastructure, whereas the indirect factors include lack of internet access at home, absence of online assignments, lack of motivation to use online information and majority of the students not having personal laptops. The statistical difference in the opinion of the students on the direct and indirect factors was not significant. The paper concludes with the implications of these challenges for information services.
Keywords: Online resources; online resources utilization; challenges of online resources; university libraries; Nigeria

1. Introduction

One of the major functions of a university is conservation of existing knowledge. The university library plays a role in this regard by ensuring that the right information resources are acquired. The use of online resources in university libraries is aimed at "broadening the range of available information resources within the library and adding value to the content by making them accessible through digital means so that students, researchers, and the entire members of the university community can access them anytime and anywhere" (Daramola 2016: 366).

Daramola further states that the library within the university systems provides the infrastructures and internet facilities to enhance student's accessibility of online resources. The availability of online resources has changed what students actually read and use (Renwick, 2005; Daramola, 2016). These resources now come in different forms such as e-book, e-journal, e-dictionaries, e-magazines, online databases and internet resources.

The University of Nigeria, Nsukka, commonly referred to as UNN, is a federal university located in Nsukka, Enugu state, Nigeria. It was founded in 1955 and formally opened on 7th October 1960. The University of Nigeria, Nsukka has four campuses – Nsukka, Enugu and Ituku-Ozalla – located in Enugu state and one in Aba, Abia state, Nigeria. As the first full-fledged indigenous and first autonomous university in Nigeria modeled upon the American educational system, UNN is the first land-grant university in Africa and one of the five elite universities in the country. It has 15 faculties and 102 academic departments and offers 82 undergraduate programs and 211 postgraduate programs. The university library provides information resources in different formats to support the academic programmes of the university.

There are different categories of students found in the university, they include: diploma students, undergraduate students, graduate and post graduate (masters) students and PhD students. This research focused on the undergraduate students. These students need information for social and academic reasons. This information can come from virtually anywhere – text books, media, library catalogues, blogs, personal experiences, journals and magazine articles, expert opinions, encyclopedias, and web pages – which provide information one needs depending on the question one is trying to answer. But in this research work, the researchers were primarily interested in the information gotten from the web pages (i.e., online information resources). The web allows one to access most types of information on the Internet through a browser. One of the main features of the web is the ability to quickly link to other related information. The web contains information in a variety formats such as texts, sounds, images, and videos. This web information is now referred to as online information resources. Online information resources, according to Tsakonas et al (2006) are information sources provided in electronic form, and they include resources available on the Internet such as research guides by subject, online indexes, electronic books and texts, electronic journals, library catalog, online reference sources, sound recordings, and image databases.

The emergence of online information resources has tremendously transformed information management in university environment in Nigeria (Ani and Ahiazu, 2008). In explaining this proposition, Ani and Ahiazu (2008) further state that some of the university library services and operations have been automated. Many university libraries in Nigeria are providing online reference services as well as training users on advanced online searching. Some of these libraries are providing services to support e-learning programmes of their parent institutions. Besides, library resources are being expanded to include both print and online resources to support learning, teaching and research. However, university libraries are greatly under pressure to provide these resources to students due to poor funding. Quite a number of initiatives are now in

place in some universities to facilitate the development, training and use of online information resources. These initiates include the Mortenson Center for International Library Programs acting on behalf of MacArthur Foundation to support selected university libraries in Nigeria, the Electronic Information for Libraries' Network (eiFL.Net) and the Universities' Connect MTN Foundation.

As part of its corporate social responsibility, the MTN Foundation through its Universities' Connect Initiative built a virtual library for the University of Nigeria, Nsukka and provided access to a number of full-text online databases. This initiative was launched in 2006 for use by both staff and students of the University. On its own part, the University Administration has successfully provided a ubiquitous wireless access to internet-based resources on campus. This means that both the virtual library and the wireless internet access on campus are intended to increase students' use of online resources for digital scholarship. This study, therefore, intends to find out how the undergraduate students use these resources in terms of the challenges of this use and then articulate the implications of these challenges for electronic resources development, training and use in the university.

1.1.Statement of the problem

Online information resources are powerful teaching and learning tools in higher education. They are efficient for activating students, and they provide tools for life-long learning. Internet provides the platform for global information accessibility and allows students to have access to huge amounts of information and a number of free applications software. It enables teachers and students to communicate through e-mail, course home pages and virtual discussion groups, and provides opportunities for distance education in tertiary institutions. Students can find information themselves to a larger extent than before, though they still need their teachers' supervision in the learning process because most of the information resources found on the internet were not peer reviewed.

Limited access to online information resources in this information age will greatly affect the students in different ways. For instance, they will find it difficult to do research and even write some of their assignments. They would be limited to only the information their lecturers have to offer alone. And even if they graduate, they may soon forget what they learnt because they have not learnt how to learn i.e. they have not developed the ability for life-long learning.

The study by Adomi et al (2004) reveals that online information resources have not been used extensively by undergraduate students in Nigeria. In a similar study conducted in a typical federal university in Nigeria, Daramola (2016) found that male students visited the e-resources more than the female students. Furthermore, anecdotal evidence and the researchers' personal experiences have revealed that majority of the undergraduate students made little or no use of electronic resources provided by the university library despite the high cost of these resources. Generally, the attitude of the students seemed lukewarm. It does appear that the students are

having challenges with the use of online information resources. This means that any policy or practical interventions that aim to address this situation ought to be well informed by drawing from empirical evidence. This paper, therefore, seeks to investigate the challenges the undergraduate students of the University of Nigeria, Nsukka are having with the use of electronic resources so as to proffer policy and practical interventions to improve access and use of these resources which the university library provides.

2. Literature Review

2.1. Use of online information resources

Historically, college and university libraries were the natural destinations for students, faculty, staff and researchers seeking for information (Ozioko, 2007). He further asserts that academic libraries serve as the repository for published information as well as the intermediary for acquiring materials from the outside world. Croom (2000) and Buekholtz (2001) state that, during the 1990s, rapid advances in digital technology have provided campus researchers and students with considerable options. These options in terms of online information resources used by students include Wikipedia Online, Bioline, Internet, Google books, Refdesk, Internet public library, Litsum, Encyclopedia of life, Answer.com, Questia and Farmer's almanac (Palmer and Sander, 2003; Croom and Buekholtz, 2001). According to Tsakonas et al (2006), online information resources are information resources provided in electronic format and are available through the internet, and they include e-book, e-journal, online databases, CD-ROM databases and other computer- based electronic networks.

Quite a number of reasons have been provided by researchers on why students use online resources (Tenopir et al, 2000; Rogar, 2001; Schubert and Chennupatic, 2001; Gregorian, 2001; Otolo, 2004; Eason and Richardson, 2005). Some of these reasons include linking to additional information (Woodward et al, 1997), searching across a wide range of journal articles (Palmer and Sandler, 2003; Liew, 2000), ease access to information and possibility of downloading or printing the desired documents, and speed and ability to send articles to their colleagues(Palmer and Sandler, 2003; Ojo and Akande, 2005) as well as supplementing notes given by lecturers, completing class assignments, writing projects and communicating via email with parents and friends (Adomi et al, 2004). Similarly, Ray and Day (2006) state that students use online information resources for three main reasons; access to a wider range of information, faster access to information, and easier access to information.

In England, Rose (2001) notes that Tilburg University Faculty members cited timely availability, easy access, full text searching, and access from home as factors that promote the use of online information resources. According to Bishop Ken (1995), focus groups of engineering faculty members and students wanted to search electronic journals quickly and easily, but they desired interfaces that could be customized and the ability to create personal collections, while economics students and faculty wanted the addition of data sets (Nicolaides, 2001). McKnight et

al (1998) found that a larger percentage of students claimed that the electronic periodicals were easier to access than the paper version. In her opinion, Agu (2002) believes that in this age, students must be critical users of information if they have to succeed in the future. She further states that the emergency of information and communication technologies (ICTs) has brought into the world a wider source of databases for students.

Some factors have been found to influence students' use of online resources. The seminal paper in this area by Tenopir (2003) identified these factors as status of the students, subject discipline, and task, type of institution, age and gender. In a similar study, Shaqour and Daher (2010) found such factors as consisting but not limited to institution facilities, instructor's support, course requirement, students' characteristics and course characteristics. For the purpose of revealing who said what with respect to the research questions under scrutiny, the researchers included gender, age and subject disciplines as the personal characteristics of the undergraduate students of this study.

2.2. Challenges of access to online information resources

Despite the overwhelming advantages of online information resources, users still face some challenges with the use of these resources. A number of studies have investigated students' challenges with the use of online resources (Sohail and Ahmad, 2017); Daramola, 2016; Omeluzor, Akibu and Akinwoye, 2016; Omosekejimi, Eghoworo and Ogo, 2015; Omeluzor, 2015, Igbo and Imo, 2014). These challenges have been identified as poor information technology infrastructure development (Omeluzor, 2015); lack of knowledge on how to use e-journal, lack of facilities, lack of time and awareness (Agba, Kingongo-Bukanya and Nyumba, 2004); large mass of irrelevant information, the need to filter the results from search, download delay, failure to find information, inadequate or lack of search skills, high cost of access, inaccessibility of some electronic resources and difficulties in navigating through electronic resources (Adeniran, 2013; Omosekejimi, Eghworo and Ogo, 2015); lack of awareness, insufficient bandwidth, high cost of internet connectivity and lack of electronic information resources (Igbo and Imo, 2014); inadequate computer systems, slow internet speed and poor network service (Ajibili and Gana, 2013); frequent power failure, poor internet connectivity, improper guidance on use of electronic resources, non-payment of subscriptions and lack of personal computers (Ogbuiyi, et al, 2014; Omeluzor, et al, 2012) and slow downloading and blockage of websites (Sohail and Ahmad, 2017).

 According to Annuobi (2009), the problems of utilization of online information resources arise basically from information pollution, destabilization potential, information insecurity, socio-technical issues and potential lack of control over communication. He further states that information pollution arises from dysfunctional provision of information that is caused by: (a) the amount of information available that exceeds the capacity of recipient to examine, to filter, and to assimilate relevant information, and (b) provision of wrong information resulting in incorrect decisions. Epic (2001) states that the proliferation of sources for articles and the sheer

amount of information now available may be confusing to some users, since retrieving too much information is a problem, as users may get lost and may not know when to quit searching. In a similar view, Gbaje (2007) says that the almost unlimited availability of information due to advances in digital technologies is creating, in the world today, information anxiety and new behavioural patterns.

In their study, Ray and Day (1998) reported that only a small percentage of respondents interviewed or surveyed agreed that there are problems. The response rate for any one concern or problem was rarely more than 20% and "top problems" were expressed by less than 10% of the respondents. Students at one university complained about how "access to online information resources hindered their academic career". Although not many of the students agreed to hindrances as they did to improvements, the top three hindrances mentioned include; online access is time consuming (16.4%), it detracts from doing work (13.5%), and lack of information technology knowledge hinders effective use (11.1%). Other problems of online information resources and services that hinge directly on Africa and Nigeria in particular as outlined by Alabi (2003) include: poor and inadequate telecommunication facilities, poor level of computer literacy among many university students and researchers, (even among library staff), poor level of awareness of internet facilities, poor computer facilities, and lack of understanding of the importance of information among Nigerians, ignorance of decision/policy makers on the power of information technology for industrial and economic development of the nation. In addition, Alabi (2003) and Uzoigwe (2002) state that the National Electric Power Authority (NEPA) now Power Holding Company of Nigeria (PHCN) is having issues with power distribution and, in most cases, has compromised its services by presenting throat cutting bills to customers, even when the company has not provided any services. Ogbonna (2003) states that the funding of higher education in Nigeria has been comparatively poor due to reduced financial allocations in recent years. The effect is that academic libraries are unable to procure and install information communication technology facilities.

Enakrire and Onyenania(2007) outline the following challenges as hampering students' access to electronic resources: financial constraints, lack of formal training on how to browse the internet, little or lack of knowledge of websites/ search engines in searching for information on the internet, slow speed of the students in typing, disinterestedness or lack of interest on the part of some of the students, lack of knowledge on how to use computers effectively, and lack of time in searching for information on the internet. Dadzie's (2005, p.295) study on the problems that users had with accessing electronic resources found that 33% indicated inadequate PCs, 28% indicated lack of information about how to use electronic resources, and 16% indicated lack of time to acquire skills needed to use resources. A similar study by Ray and Day (1998, p.10) on students' attitude towards electronic resources revealed that majority (16%) of the students noted that using electronic resources was time consuming, and 11% said that there was too much information retrieved coupled with limited access to computer terminals.

Suggestions have been made by researchers on how to mitigate the challenges students are facing with the use of online resources. Haris (1999) is of the view that libraries must play an active role in providing subject access to information on the internet, creating useful resources for users, and developing knowledge that will prove useful in providing reference and instructional services to the students. Previous studies have demonstrated how such factors like effective leadership, current trends in LIS field and self-development could be used to improve students' use of online resources (Gbaje, 2007; Alabi, 2003; Ogbonna, 2003). According to Ogbonna (2003), good governance, eradication of corruption, economic growth of the nation and adequate funding of institutions of higher learning will go a long way in improving students' use of online information services. Gbaje (2007) notes that the acquisition of online information resources can be very easy and cheap if our university management is fair enough. The issue of giving out purchase and contracts to relations who lack the necessary expertise should be checked. Nwagwu (2006) recommended that the federal ministries of education, information science and technology, library and information science schools, governing bodies of special research institutions should embark on networking, website designs and computerization of their libraries. Alabi (2003) suggested that in as much as the employers have the responsibility of training their staff, information disseminators should not wait on government or employers to train them on ICT and on the use of online information resources. They should be at alert to know what is happening in ICT/WWW world and be ready to learn on their own as well as pay for their training for proper self-development. Culna (1985) states that online service providers should live up to expectations by providing what they claim, revisiting content and keeping the content up- to- date.

In the context of this study, the above challenges are categorized into direct and indirect factors. Direct factors are operationalized as the difficulties that students encounter while using online resources. Such factors include incessant power failure, inadequate online resources, lack of skills to use online resources and restricted access to online resources. The indirect factors are used in this study to represent other factors with human interactive dimensions that contribute also to students' difficulties with the use of online information resources. For instance, if a student finds it difficult to access online resources due to some direct factors, there may be other indirect factors such as lack of pedagogical and emotional support from peers and teachers, and students' characteristics that contribute also to this difficulty. The students' characteristics include age, gender, specialty, computer literacy, ownership of laptops or computer systems, and access to internet at home (Shaquor and Daher, 2010). Previous studies have shown positive relationships between these factors (direct and indirect) and students' use of online information resources (Shaquor and Daher, 2010).

2.3. Studies on use of online information resources in Nigerian universities

Literature revealed that studies on students' use of online information in Nigeria are scanty (Gitta and Odongo, 2009; Jagboro, 2003; Annuobi, 2005; Adomi, Omodeko and Otolo, 2004). A study on the use of electronic resources in Obafemi Awolowo University, Ile-Ife by Jagboro

(2003) revealed that the use of the internet ranked high among the sources of research materials. He concluded that internet use for academic work could be improved if more access points were provided at departmental and faculty levels. Odongo's (2009) study on the impact of Cyber Cafe on information services in Uganda revealed that users of Cyber Cafe represented two-thirds of the study group and they were in the age bracket of 20-39 years. Half of them indicated satisfaction with the services while one-third used the internet daily. Likewise, a survey of cyber cafe use at Delta State University, Abraka, by Adomi et al (2004) revealed that majority of the undergraduates have not used the cafe for a long period. Most of them used the internet to send and receive e-mail or browse for information. They concluded that most of these students acquired computer knowledge and skills through practical self-teaching.

Annuobi (2005) investigated the information and technology facilities available in Nigerian University libraries, the use mode of them and the distribution of such facilities with reference to the geographical location and the founding body of university. The study revealed that the percentage of libraries using Wide Area Networks, Fax machine, internet and online public access were below 50%. She stated that there was low level or lack of information technology facilities in third generation universities in Nigeria, while the first generation universities had highest commitment in this regard. The facilities were more prevalent in Northern than in Southern university libraries. She concluded that there was gross absence of such facilities in state university libraries.

Finally, from the above studies, it is clear that there is dearth of research in the area of utilization of online information resources in Nigerian universities to inform policy and practical interventions. This is, therefore, the gap which this study intends to fill.

3. Purpose of the Study

The purpose of this study is to identify the challenges undergraduate students are facing with the use the online information resources in the University of Nigeria, Nsukka with a view to articulating the implications of these challenges for e-resources development, training and use in the University library system. The specific objectives of the study include:

1. To identify the online information resources used by the undergraduate students of the university of Nigeria, Nsukka.
2. To find out students' preferred options for access to online resources.
3. To identify the direct factors underlying students' challenges with online information use
4. To identify the indirect factors underlying students' challenges with online information use
5. To proffer policy and practical interventions to improve access and use of online information resources.

3.1.Research Questions

The following research questions were formulated to guide the study:

1. What are the online information resources used by the students of the University of Nigeria, Nsukka?
2. What are the preferred options for access to online information resources?
3. What are the direct factors underlying students' challenges with online information use?
4. What are the indirect factors underlying students' challenges with online information use?
5. Is the difference between the direct and indirect factors as perceived by the students statistically significant?

4. Methodology

This study was based on qualitative research approach. Studies carried out through a qualitative approach aim to understand a particular phenomenon through those experiencing it (Vaismoradi, Turumen and Bondas, 2013). In this study, the phenomenon is online information resources, and the qualitative approach was chosen to understand the challenges that students face with their use of these resources. Further, the qualitative approach was chosen to better get the participants' insights. The qualitative approach was underpinned by inductive content analysis. Inductive content analysis enables researchers to describe the characteristics of a document's content by reporting "who says what, to whom and with what effect"(Bloor and Wood, 2006: 58). These authors maintain that inductive content analysis is employed by counting and reporting occurrences of themes, words or phrases within one or more documents. This study employed qualitative descriptive inductive content analysis that enabled the researchers to reveal who said what with respect to the research questions that guided the study. This means that the qualitative data would be analyzed through inductive content analysis to represent participants' perspectives on each of the research questions. This type of analysis usually employs a questionnaire with open-ended questions and a few multiple choice questions for data collection (Bardakci, Arslan and Unver, 2017).

4.1.Data collection

Questionnaire was used to collect data from the participants. The researchers believed that the students would express their views more in writing than in face- to – face interview. The use of both questionnaire and inductive content analysis is being considered by scholars in qualitative research (Bardakci, Arslan and Unver, 2017). The questionnaire used in this study was developed by the researchers. The construction of the questionnaire was guided by both the research questions and literature review regarding the place of online resources in students' academic activities. The questionnaire consisted of two open-ended questions, two multiple response questions and three demographics. While Section A of the questionnaire consisted of

the demographic information of the participants, Section B covered students' use of online resources as well as the challenges that students faced with the use of these resources. Online resources in this study consist of those internet-based resources that the university library subscribes to as well as those that are freely available. Specific online resources listed in this section include those that the university library subscribes to and those that are freely available. The online resources that the library subscribes to are made available to the students on the UNN website for access. However, as at the time of this study, the full-text database with renewed subscription was EBSCO Host Research Database. Section C consisted of personal and departmental factors in students' academic life or experience.

4.2. Participants

The study was done in the University of Nigeria, Nsukka, which is one of the biggest universities in Nigeria in terms of ICT development, library holdings and virtual library development for access to online resources. The research participants were first degree students who were in their third year of study. These students ought to have obtained basic library, research and information skills. Also, these third year students were those who visited the Library between September 30, 2015 and March 31, 2016. First semester in the University usually falls within this period, and it is a period when third year students are expected to provide background information on their chosen research topics. The demographic characteristics of the participants are illustrated in Table 1. Convenience sampling was used to identify the participants as it enables researchers to reach groups of students who are available (Fraenkel and Wallen, 2006). Copies of the questionnaire were produced and administered or distributed by the researchers to third year students who visited or came to use the university library within the period indicated above. As the views of the participants became saturated, that is, reached the point at which the researchers could not get new information from the participants, the collection of the data was terminated. A total of 200 third year students completed the questionnaire successfully and their responses were used for this study.

4.3. Data analysis

After the data collection, the researchers started to generate themes and codes to be able to answer the research questions. Inductive content analysis was applied to the qualitative data. Descriptive statistics were also used to determine frequencies or percentages for the relevant codes that formed the themes. The difference in the perceptions of the students on the direct and indirect factors underlying the challenges of online resources' usage was determined statistically using paired t-test.

4.4. Trustworthiness

Trustworthiness of qualitative research can be measured by credibility, transferability and dependability of data (Shenton, 2003; Pitney, 2004). Triangulation of data sources was adopted by the researchers to achieve credibility by ensuring that participants from different faculties

were used. For transferability of data, the researchers provided detailed descriptions for methods, data collection, data analysis and participants. Finally, the collection of data up until the saturation point was done to achieve dependability.

5. Results

5.1. Demographics of the participants

The personal characteristics of the students who participated in this study are presented in Table 1 below.

Table 1: The students' characteristics

Variable	Variable factor	F	%
Gender	Female	130	65
	Male	70	35
Discipline	Sciences	40	20
	Social Sciences	94	47
	Arts and Humanities	66	33
Age	Min. = 20, Max. = 35		
	Mean = 32.67, SD = 6.24		

Table 1 shows the personal characteristics of the students. The table revealed more female (65%) than Male (35%) participants of this study. The greatest number of the students or participants came from the Social Sciences Discipline (47%), followed by Arts and Humanities (33%) and then Sciences (20%). The mean age of the students who participated in the study was 32.67, which means that the participants were mainly young students.

5.2. Online resources used by the undergraduate students

Participants of the study were asked to specify the kinds of online information resources that they used. Table 2 displays the online resources most widely used by the students.

Table 2: Online resources used by students (N = 200)

Online resources	F	%
Wikipedia Online Encyclopaedia	160	80
E-Journals	78	39
Library of Congress database	32	16
UNN Website	94	47
Nigeria Bureau of Statistics	24	12
EBSCO host Research Databases	20	10
Classic Encyclopaedia	42	21
Internet Public Library	128	64
Google Books	134	67
Answer.Com	112	56
Agora	62	31
Bioline International	34	17
Science Direct	94	47
New York Times	34	17
Encyclopaedia of Life	86	43

Table 2 above clearly shows that not many students used the online information resources in the university. The most widely used online resources were the freely available ones such as Wikipedia (80%), Google Books (67%) and Internet public library (64%). It can also be deduced from this table that many online resources, especially those that the university library is subscribing to such as e-journal, e-book, Science Direct, and EBSCO Host Database were not widely used. From the table, eight (10) out of the total of fifteen (15) resources were not widely used. This signifies that the online resources in the library are under- utilized. Here are the statements of some of the applicants:

> "The library that is supposed to provide access to online resources does not help users to become always aware of these resources" (Male students, Social Sciences Discipline)

> "Online information resources have peculiar characteristics and are difficult to understand or use. It requires training and searching skills which the library can provide to enable students use these resources" (Male student, Social Sciences Discipline).

> "Our faculty libraries that would have provided us with much library experience do not have internet access or adequate ICT facilities to enhance our information literacy skills" (Female student, Arts and Humanities Discipline)

" There are now too many online resources available that one may not even know those that are related to one's research area or academic field" (Female student, Social Sciences Discipline).

5.3. The preferred options for access to online information resources

The participants were asked to indicate their preferred options for access to online information. Their preferences are as presented in Table 3 below:

Table 3: Preferred options for access to online information resources

Places	F	%
University library	98	49
Faculty library	32	16
Cyber cafes/ internet centers	186	93
Smart phones	60	30
Home internet connectivity	10	5

Table 3 shows the students' preferred options for access to online information resources. The most preferred option was Cyber cafes (93%) and followed by university library system (46%). One of the reasons for this is the library's irregular subscriptions to full-text online databases, especially those with restricted access. The second reason is that some of the library's online information resources are freely available on the web. This may have explained the low rating the university's website received from the students. The third reason is that the library does not have enough ICT facilities for students' use. The library's online resources are available on the university's website. These resources are accessible on the internet. Access codes to the subscribed online resources are given only to registered library users. With these codes, library users can have access to the subscribed materials within the university but not outside the university. It is not surprising that the university library was ranked second. This may also be due to the challenges of using online resources in the university library. Here are the statements of some of the applicants:

"No need to go the library when you can virtually access information using your mobile phone" (Female student, Social Sciences Discipline)

"We do not have time to go to the library to look for information resources. Even the training sessions in the library are conflicting with our lectures" (Female student, Arts and Humanities Discipline)

"Locating information in the library is tasking and requires constant training and good retrieval skills" (Male student, Science Discipline).

5.4. The direct factors underlying students' challenges with online information use

Participants of the study were asked to state the challenges they often encountered with the use of online resources. The following key words or categories were extracted from their responses: browsing skills, ICT infrastructure, search strategy, complexity of online resources, subscriptions, downloading/printing, power supply, bandwidth issues, time for browsing, and meeting information needs. The students or participants differed in their opinions on the challenges of using online information resources. The following are examples of the statements by some of the participants:

One student says "I do not know how to browse to get information online" (Female, Science Discipline, while another student says, "I can do my assignment because I can browse to get information online, but I lack advanced searching skills (Female, Science Discipline. On their abilities to develop appropriate search strategy for specific information, the students have this to say:

> "I can conduct a basic search to get information online, but I find it difficult to use Boolean algebra for more advanced searches on the internet" (Male, Social Science Discipline).

Contrary to the above view, another student says, "I can find online information using both basic and advanced search strategy but the internet bandwidth for the library is limited" (Male, Arts and Humanities Discipline). The students argued that the university library does not have enough ICT infrastructures to serve the student population. However, they seem to differ on the relevance and appropriateness of the online resources in the library. One of the students says, "I do not get all the information I want from the online information resources in the library" (Female, Science Discipline). Another student opposed this view saying, "I have always used the online information resources to do my assignments and for term paper writing in the library, but the major problems are unstable power supply and limited bandwidth" (Female, Science Discipline).

While all the students agreed that some online resources are both complex and difficult to use, they, however, differed on time for browsing. One of the students has this to say, "I do not have enough time to browse due to pressure from my academic work" (Male, Science Discipline). Another student says, "I do make out time for browsing for academic purposes, but I do not often know which of the online resources are related to my work" (Female, Arts and Humanities Discipline). On other related issues such as cost of downloading/printing, subscription, bandwidth and power supply, the students seem to agree, but have divergent views on the downloading/printing cost. One student says:

> "One good thing about online resources is that one can easily download and print. This is not so especially when compared to what one would have spent to have those online

documents. However, downloading and printing depend on stable power supply"(Male, Social Sciences Discipline).

"The cost of printing downloaded articles from the web is high. Many students do not have laptops where these web resources can be saved as downloads" (Female, Social Sciences Discipline)

"Financial constraint is a challenge; I do not have enough money to pay for printing of downloaded articles from the web, because the articles are often bulky, and, sometimes, they may not contain what one wants" (Female, Science Discipline).

Another student listed his challenges as unstable power supply, inability to carry advanced searches, incessant network failure, and many unrelated online resources (Male, Science Discipline). He concluded by saying, "I do not have a laptop or a strong mobile phone for online access, and the library may help by providing regular training for students on the use of online resources and also by creating awareness workshop on online resources available in the library" (Male, Science Discipline).

The keywords or codes extracted from the responses of the participants were counted and reported as shown in Table 4 below.

Table 4: Direct factors underlying students' challenges with online information use

Challenges	F	%
Lack of browsing skills	108	54
Insufficient ICT infrastructures	104	52
Poor knowledge of search strategy	116	58
Complexity of online resources	100	50
High subscription cost	102	51
High downloading/printing cost	84	42
Unstable power supply	194	97
Low internet bandwidth	198	99
Lack of time for browsing	100	50
Online resources not relevant	16	8
Too many online databases	6	3
Uncooperative attitudes of library staff	18	9

5.5. The indirect factors underlying students' challenges with online information use

The participants were asked to respond to the indirect factors underlying the difficulties they encountered with the use of online information resources. The responses were collated and presented as shown in Table 5 below.

Table 5: Indirect factors underlying students' challenges with online information usage

Underlying factors	f	%
I do not own a laptop	160	80
I have no smart phone for m-learning	140	70
I have no internet access in my hall of residence	170	85
I have no internet access in my home	190	95
My department provides less opportunities for cooperative learning	8	4
My lecturers do not give us online assignments	185	92.5
No functional computer lab. in my department	140	70
My department is yet to provide us with the needed social pressure for online information use	168	84
My course of study is a factor	130	65
No time to attend awareness workshop on online resources	160	80
I do extra jobs to enable me be in school	140	70

Table 5 shows that the indirect factors underlying the students' predicaments or challenges with online information use. The most crucial of the underlying factors include: 1. Lack of internet connectivity at home: Majority of the participants (95%) do not have internet connectivity in their various homes. 2. Absence of online assignments: This study revealed that online assignments were scarcely given to students. This was supported by 92.5% of the participants. 3. Students do not have internet access in their halls of residence: Greater percentage of the participants (85%) did not have access to the internet in their hostels. 4. Poor social pressure for online information use: Data in Table 5 revealed that 84% of the participants indicated that their departments were yet to provide the needed social pressure for online information use. As a result they lacked the motivation to use online sources. 5. Ownership of laptops is lacking: Results of the study showed that 80% of the participants do not have personal laptops for independent study. 6. No time to attend awareness workshop on online resources: Majority of the students (80%) agreed that even though awareness workshop on online resources is crucial, they had no time to participate in the workshops.7. No functional computer lab: The findings in Table 5 showed that 70% of the students were in agreement that their departments do not have functional computer lab for online searching. 8. Engaging in extra jobs to be in school: Results showed that 70% of the participants were doing extra jobs to raise money so as to be in school. Finally, a greater percentage of the students do not have smart phones for m-learning experience.

5.6.The difference between the direct and indirect factors

The study also tries to determine statistically the direct and indirect factors underlying students' challenges with the use of online resources. This difference is depicted in Table 6 as shown below.

Table 6: Difference between direct and indirect factors of students' challenges

Challenges	Mean	SD	N	df	T	P - value
Direct factors	95.5	61.4	11	10	-2.01	0.070
Indirect factors	140	48.3				

The purpose of Table 6 is to determine whether there is a statistical difference in the opinions of students on the direct and indirect factors underlying the challenges of online information resources' usage. In other words, the paper tries to find out whether statistical differences exist or not in students' evaluation of the factors (direct and indirect) that constitute hindrances to online information resources' usage. Though these factors are conceptually related, differences in students' evaluations affect this relationship. The result of the statistical analysis informed the practical interventions aimed at improving students' access to online information resources in the university. Paired t-test was used to test for the significance of the difference between the students' perceived direct and indirect factors. This was done at 0.05 probability level. The results revealed that the test is not significant (t = -2.01, p > 0.05) indicating that there is no significant difference between the perceived direct and indirect factors underlying the difficulties or challenges students faced with the use of online information. However, the results also revealed that indirect factors have greater mean score than the direct factors, which is an indication that these factors are crucial in understanding the students' challenges with the use of online information.

6. Discussion of Findings

The results show that most of the online information resources were not used by the undergraduate students; a few of them were widely used. It is also clear from the findings that 33% the online information sources listed in this study were widely used by the students, while 67% representing about 10 out of 15 different online resources were not widely used. The few resources that were used consisted of freely available resources on the web. This finding is in agreement with the findings of Adomi et al (2004) which revealed that majority of undergraduates have not used most of the online information resources extensively but only focused on few ones like Google Books. In the present study, the few ones that were widely used include Wikipedia, Internet public library, Google books, Answer.com and the Punch, Vanguard. This means that only the general purpose online databases or search engines like Google and Wikipedia were widely used. Jagboro (2003) in a study carried out in Obafemi Awolowo University, Ile-Ife found that the use of internet ranked high among the sources of research

material. The Internet is a broad source of information. The present study was based on internet-based sources and from which Wikipedia was found to have high usage among the students compared with EBSCO host with the least usage. The result is surprising because the specific online resources such as e-journal, university library websites, and EBSCO host were not widely used. This finding seems to contradict the reported 91.67% use of e-journal by undergraduate students in the work by Daramola (2016).

The internet penetration and suffusion in the University has made the students to begin to look for other options outside the library for access to online resources. The library ranked second in the list of preferred options for online information access. The most preferred option was Cyber cafes, as indicated by the students. The use of mobile phones ranked third probably because many of the students could not afford or own laptops for the same purpose.

 The students are really having challenges with the use of online resources in the University. The most disturbing of these challenges are low internet bandwidth, unstable power supply, insufficient ICT infrastructure, poor browsing skills and high subscription cost. Other challenges found include lack of browsing time and complexity of online resources. This situation is affecting students in several ways. First, students' project works in the University suffer from current literature because the reports of their literature reviews are never comprehensive. Second, the validity and reliability of students' research results are often questionable due largely to lack of strong methodologies from the extant literature. Third, lack of access to online information resources limits students' research interests and robs off the students' collaborative learning since the students can neither share nor distribute the online resources. For instance, research areas like bibliometrics, altmetrics as well as webometrics depend very largely on bibliographic databases that are accessible via the internet. Students with limited or no access to internet-based information resources may not do well in those research areas. These findings are in agreement with those of Annuobi(2005), Enakrire and Onynania(2007), Dadzie(2005) and Ray and day(1998). These authors identified these challenges as lack of ICT infrastructure, lack of browsing skills, and lack of time for browsing and for training to acquire skills, financial constraints and lack of information about how to use electronic resources. It is worthy of note here that the students still consider ICT infrastructure in the University as a challenge, considering the virtual library development and other computer facilities in the university library. One explanation for this may be the number of students enrolment compared to the ICT facilities available for use in the University. Another explanation may stem from the fact that many of the faculty/departmental libraries in the University lack ICT resources including internet access.   It is important to point out that power failure in the University library is quite disturbing. Though the Library has an 800KVA power plant, there are logistic reasons that affect its use. However, one will not ignore the fact that power failure is also a national issue. In support of this situation, Uzoigwe (2002) states that the National Electric Power Authority (NEPA) now Power Holding Company of Nigeria (PHCN) has its own problems with regular power supplies in the country. Another factor that needs mention here is low internet bandwidth in the University. This is

because students' regular visits to other places outside the University library especially on daily basis for internet access clearly indicate that the bandwidth is low. Even in the University library, the number of computers is not enough, and this makes students to queue up on daily basis to have access to online information resources in the library.

Furthermore, this study found that there were some student-related and departmental factors that compounded the students' difficulties with online information use. Majority of these students have neither personal laptops nor smart phones. They do not have internet connectivity in their various homes either. This situation may have affected students' determination or personal efforts to use online information resources and may explain why lack of skills in formulating appropriate search strategy is the greatest challenge. Closely related to these factors is the fact that the majority of the students do not have internet access in their halls of residence. However, departmental factors found in this study require serious attention to help these students considering the nature of their personal factors. The most crucial of these departmental factors include poor social pressure for online information use, unconducive ICT environment, irregular awareness workshop on online information resources and absence of online assignments. These factors may also be responsible for the students' poor knowledge of online searching and insufficient full-text databases in the students' fields of study.

Finally, the results of this study also showed that there is no significant difference in the perceived direct and indirect factors underlying students' challenges with online information use. This lends credence to the fact that some if not all the indirect factors might have heightened the direct factors, considering the higher mean score of the indirect factors. This presupposes that any intervention programmes aimed at improving students' access to online information must address the direct and indirect factors underlying the students' challenges with online information use.

7. Implications of the challenges

The challenges of using online information resources by students have both policy and practical implications. The policy and practical interventions to improve access and use of e-resources are highlighted below:

Training of students on online searching

Undergraduate students should be given orientation or more education on how to identify, use and evaluation online information resources. Hardy (2010) argued that as the availability of information has expanded exponentially, well trained academic librarians ought to be positioned to help readers navigate and evaluate library – based information resources. This education should target specific skills set such as browsing skills, basic online searching skills and advanced search strategy. This can be achieved by integrating online information searching into the university curricular. Authors like Heseltine (2000) and Muteshwa (2004) have agreed that

information literacy can be successful when it is integrated into curriculum. Training students to acquire information skills can be more meaningful to them (ie, students) when information sources are related to various courses in the university.

Functional ICT Policy

The university library management and the university administration as well as the relevant organs of the university such as the ICT Unit should work together toward developing a functional ICT policy for the university library. This policy should create a budget for ICT infrastructural development in the university library and help also to design websites for faculties and departments in the University. These websites are obviously non-existent. It is hoped that when these websites are designed, information will be disseminated to the library user community and the sites will also allow lecturers to have access to library information resources in their offices. It is hoped that the ICT policy will address the issue of low bandwidth, and this will facilitate expanded access to internet resources and help to organize online training for the students.

Funding of the university library

The ten (10) percent of the university's recurrent expenditure, as directed by the National Universities Commission (NUC), should always be allocated to the university library. This will help the university library to maintain its subscription cost and to ensure also that there is a balance between print resources and online information resources in the library. Adequate funding will also help the university library to develop new services or to provide value added services to lecturers and students. Poor funding has negative impact on library resources and services. The effects of inadequate funding as highlighted by Komolafe – Opadeji and Haliso (2012) include lack of current books, journals and other information resources as well as lack of user attraction and little professional activism.

Regular power supply

Incessant power failure affects library services. The situation often forces the library to shut down its services before the closing time. Uzoigwe (2002) also added that without regular power supply, the aim of installing and providing online services would be defeated. Extending library hours may not be possible in a situation of uncertainty. The library provides space for students especially during peak periods. Regular power supply will not only enhance the library's image but also attract more users to the library. In addition, the students can have more access hours in the library.

Students' support for information accessibility

The university administration should provide support to students to enable them have uninterrupted access to online resources. This support may take two forms. The first form is by

scaling up the number of ICT facilities in the library which may include providing more computers for students' use. The second form is by providing laptops to students at subsidized rate to enable them browse at their easiest convenience. Whichever form the students' support takes; it has the potential of increasing the use of online resources by the students. Equipping the university library with more computers, according to Gakibayo, Ikoja-Odongo and Okello-Obura(2013) will improve on full text delivery of resources, electronic document delivery and the use of search engines. The library itself can provide further support through sensitization and awareness creation. According to Gakibayo ,Ikoja-Odongo and Okello-Obura (2013), the university library should update faculties on the available online information resources through email, alert messages and text messages.

Electronic Resources Librarian needed

The new library information environment is increasingly becoming competitive. Besides, library users now hold the view that information is no longer the property of the library. This view may not be easily dismissed as erroneous especially when it is placed in the context of collective intelligence or web 2.0 applications. The best way to look at this view is to see it as a challenge that requires serious attention in the library. An electronic resources librarian's position needs to be created for electronic resources development in the library and to ensure that e-resources are downloaded on stand-alone computer systems in the library for use by all students. Downloading of e-resources on the stand-alone computers is important because many of the undergraduate students do not have personal computers or internet access in their various homes. This implies that the acquisition policy of the library has to be modified to emphasize e-resources more. Another obvious reason for this new position in the library is that the traditional academic library systems have come to embrace the digital library model (Riju, 2014) and academic librarians must adopt this model for innovative and interactive library services. As far back as 2003, M.A. Omoniwa insisted that employment of librarians should be based on skills in technology applications. Gakibayo,Ikoja-odongo and Okello- Obura (2013) maintain that this strategy will improve on e-resources utilization as the technology librarian (Asogwa and Ugwu, 2016) is expected to provide leadership in computer application.

Consortium building

Since no library is self-sufficient, consortium building may help in this regard. Consortium building has the advantage of helping libraries to expand their resource-base and provide resources to meet user needs. Many full-text online databases like *Science Direct* and *EBSCO Host* are quite expensive, but through consortium building access can be provided to them. The University library is not adequately providing access to online information resources which can be improved through library partnership arrangements or library consortia to help students have uninterrupted access to online information. Library consortium building will help deal with the

high cost of subscriptions as reported by the students. These students observed that some of the materials they wanted to use for research have restricted access and often with condition of payment for access called subscription fee. Such fees are always in foreign currency and usually too high for students. These students now rely on the library for access to those restricted materials or subscribed materials. To this end, libraries the world over are forming alliances for the purpose of meeting the needs of users, and identifying and addressing common needs arising from developments in information technology (Dai and Zhang, 2000; Gakibayo, Ikoja – Odongo and Okello –Obura, 2013). The strategies that will help consortium building to work include selecting a coordinating agency, identifying the potential publishers/vendors or aggregators to provide access to e- resources in which payment is made by the members of the group and, finally, identifying the necessary infrastructure for access to electronic resources.

8. Conclusion

The exponential growth of information and the availability of information in different formats are key issues underlying studies on utilization of online resources by students. The present study tried to uncover the direct and indirect factors underlying the challenges that undergraduate students of the University of Nigeria, Nsukka faced with online information use. Generally, students' use of online resources was found to be low as many online resources were not widely used. The few online information resources with average usage were mainly those that were freely available on the web. None of the resources that the library subscribes to received average usage by the students. For instance, the least used of the subscribed resources was EBSCO Host Database. This may be as a result of the challenges that students faced with the use of online resources. Furthermore, students' preference of general purpose online databases or those that are freely available on the web may result from the difficulty they encountered in using subject-specific and specialized databases such as EBSCO Host Database. It must be explained that the reported high cost of subscription does not mean that students are paying to have access or for some subscriptions. It rather means that those students who considered the option of paying for online resources with access restrictions could not do so because of the subscription cost. It could also mean that why the university library is not helping students to have access to a variety of online resources especially subject specific full-text online databases was due to the cost of subscriptions, as reported in previous research in this area. In which ever case, students' access to online resources is affected negatively.

The most intense of the direct factors underlying these challenges that require urgent attention include low internet bandwidth, unstable power supply, insufficient ICT infrastructure, poor browsing skills and high subscription cost. However, these factors may not be unconnected with some student- related factors such as lack of internet connectivity either at home or halls of residence, and many of these students do not have either laptops or smart phones and also lack

the motivation to use online information resources. The reason for this is that this study reveals that the difference between perceived direct factors and indirect factors underlying students' challenges is not significant. Based on these challenges, this paper recommends some policy and practical interventions to improve access and use of online resources in the university system. Over and above these recommendations, librarians in the University of Nigeria, Nsukka, Library system should provide training to students for them to use online databases effectively in their different subject fields. The reason is that previous research has shown that access to online resources is influenced by ability to work with access tools. The librarians are expected to help the students work with the access tools. This training is timely and relevant because this study has shown that the library's online information resources are not widely used by the students

There are some limitations of the study which may have affected the findings in one way or another. First, some questionnaire items allowed for self-evaluation. For instance, the statement that sought to find whether ownership of laptops or home access to internet was a factor called for self- evaluation, which may likely be biased. Second, even though convenience sampling was chosen for this study, it often creates a selection bias and does not show population representation. To deal with these two issues, further studies in this area should adopt a quantitative approach with appropriate sampling procedures that allow for randomization.

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