

# Conceptual and Adoption of Technology Acceptance Model in Digital Information Resources Usage by Undergraduates: Implication to Higher Institutions Education in Delta and Edo of Nigeria

Lucky Oghenetega Urhiewhu(CLN)

Department of Library and Information and Science, Madonna University Nigeria-Okija Campus Anambra State

Emojorho, Daniel(PhD)

Delta State University Library. Asaba Campus. Nigeria

## Abstract

The article paper was on conceptual and theoretical framework of digital information resources usage by undergraduates: Implication to higher institutions education in Delta and Edo of Nigeria.. It revealed the concept of digital information resources and model theory that related to the study. Finding shows that DIRs are use to low extent in all the university libraries. The finding also shows negligence on the part of university management of Federal University of Petroleum Resources Library that have no digital information resources at all. Another findings showed that constraints to students effective use of Digital Information Resources in the University Libraries are epileptic power supply; non-availability of online databases; inadequate number of computers to access digital information resources; inadequate bandwidth; Network problems; lack of skill to access digital information resources in local and foreign databases; Lack of formal training on internet use; Server slowness and frequent breakdown of digital resources. The implications to higher institutions education in Delta and Edo States include: It has been empirically proved that three university libraries in Delta and Edo state used for the study made DIRs available for their undergraduates. This implies that the institutions moved with current trends of digital age in higher institution. The study has revealed that the Digital Information Resources are used to low extent by undergraduates in UNIBEN; AAU; DELSU and FUPR. The implication is that undergraduates that utilized digital information resources to low extent will lag behind in their research, learning and assignment process in this digital age. The students could not compare themselves with other institutions of higher learning that use DIRs to a very great extent.

**Keywords:** Digital resources, Higher institutions, Undergraduates, Information, Services.

## Introduction

In recent times, universities in Africa have embarked on integration of technology in their operations. This serves as a tool for improvement and development, especially in a situation where attention is drawn to the academic contents and ways of digitizing and preserving them. University libraries are fully involved in this development as they are the heart of the university. This is because University libraries house the intellectual contents of the institutions. This effort to digitize the intellectual property of the institution is what is known as digitization (Adeyinka, Adedeji, Ayen, & Omoba, 2008).

The major function of libraries, irrespective of type, is to provide the right materials (resources in all formats) to meet the information needs of users. A university library aims at serving students and researchers at all levels, hence, librarians must be ready to acquire and make available necessary databases for teaching and research for the university communities (Devi & Singh, 2004). Devi and Singh further stated that information explosion and information technology revolution leading to the emergence of digital information era has made several library resources available for clientele.

In a digital library, resources are stored and made available in digital forms, and the services of the library are also made available electronically. Rosenberg (2005) noted that these services are made available frequently over the Internet so that users can access electronic materials remotely. This refers to e-services which most libraries are trying to embrace in the digital environment. Rosenberg further stated that as libraries embrace the digital environment, their most crucial role is not that of providing e-resources, but of establishing services that facilitate access to available information. According to Fabunmi, Paris and Fabunmi (2006), library

digitization has become part of the work of librarians, and most libraries are involved in digitization. Libraries in Nigeria universities are not left out in this trend of digitization.

Digital Information Resources(DIRs) connotes those information resources which before now were in print form, but currently found in non- print form ( soft copy) and are accessible through computer machines and other corresponding ICT tools(Obaseki, Umeji & Krubu, 2010). Similarly, Digital Information Resources(DIRs)includes music's, games, stories, articles from magazines, published journals and books, encyclopaedias, pamphlets, cartographic materials and other published resources that are in soft copies. They also often include sound animated graphics, pictures and movies.

The aim of digitizing library materials is for preservation and easy access by students, researchers and other users. In the words of Fabunmi, Paris and Fabunmi (2006:30) stated that:

Digitization improves access to library resources. By digitizing library collections, information will be accessible to all instead of a group of researchers. Digital projects allow users to search for collections rapidly and comprehensively from anywhere at any time. Digitization makes the invisible to be visible. Several users can access the same material the same time without hindrance. It also removes the problem of distance, as users do not have to travel to libraries that possess the hard copies of library materials before they can access and use such materials.

Okwaro (2010) while discussing issues relating to digital libraries and development, draw attention to the key principle of the World Summit on the Information Society (WSIS) which emphasized the common desire and commitment of the world to build a people - centred, inclusive and development-oriented information society. According to him, it would facilitate a situation where everyone can create, access, utilize and share information which is aimed at enabling individuals and communities to achieve their full potential in promoting sustainable development. Therefore, Digital Information Resources(DIRs) of an institution's library has a lot of positive effects. In addition to this, Imo and Igbo (2011) stated that digitalization promotes access to information for the end user such as researchers, lecturers and more especially undergraduates and also enhances the status of the institution engaged in the initiative at the global level. A digital information resource of African origin involves diverse kinds of materials. In studies conducted by Fatoki (2007), the materials considered for digital resources include, published articles, theses, dissertations, conference papers, reports, technical and working papers, photographs, newspapers, government official publications, data/ statistics, artefacts, maps, charts, artistic paintings, historical documents and African documents and manuscripts.

Omekwu (2002: 100) also pointed out that:

Traditional domains of librarians and libraries have always been in the printed page. The strength of services has also been on delivery of library- held information resources to the clientele system. So it is understandable when librarians talk excitingly about the largeness of their collection and the membership of their clientele system. But these two factors – the printed page and their provision to users are already at a crossroad with the challenges which ICT information systems pose to the traditional orientations.

In effect, there is an obvious shift from the traditional collection development and services approaches to modern trends in library and information and documentation services. Libraries, until the past two decades, were basically discharging their functions via the provision of printed materials and rendering of traditional services which made it compulsory for face to face contact with the users before they could receive any service (Ukachi, 2011). According to Ukachi (2011), presently the service delivery of libraries especially that in higher education sector has taken another dimension. Information needs of learners and knowledge seekers are met through a plethora of sources Digital Information Resources(DIRs), that is, library resources in electronic formats, are now acquired by libraries to compliment the printed materials.

The importance of digital libraries in area of information and knowledge provisions to human resources in all sphere of life cannot be over -emphasized. It is obvious that academic libraries all over the world and particularly in Nigeria are challenged with issues such as paucity of finance to acquire information resources in print form, and even subscribe to electronic resources; competent library professionals suitable for the digital era are also inadequate.

Another potential problem in digital age in developing countries is hardware and software related problems, human resources to man the technologies effectively as well as power supply instability. This situation is prevalent in most academic libraries and has great implication for education development of this nation (Omekwu, 2002).

Despite the above challenges, making digital resources and services available for use by students and other users becomes very vital as digital libraries provide access to information resources such as databases, electronic journal (e-journal), electronic book (e- book) alerting services, , special collections, CD-ROM, online reference tools and these improve the quality of teaching and research (Lee, 2008). Therefore, it has become expedient to know the availability and uses of these Digital Information Resources (DIRs) for academic purposes. Since information seekers are no longer satisfied with the printed materials alone, the only alternative are digital information resources in the digital age. Based on this the researchers want to investigate the Conceptual and theoretical framework of digital information resources usage by undergraduates: Implication to higher institutions education in Delta and Edo of Nigeria

### **Concept of Digital Information Resources (DIRs)**

These are library materials produced in digital formats, such as, e-journals, e-books, reference work published online and CD-ROM, bibliographic databases, and other web based resources(Okoro,2008). That means digital resources could be on PC, CD-ROM, DVD or on the Internet. But materials that appeared on the Internet are generally regarded as online information resources. The provision of DIRs in academic library is necessary for users especially, for the provision of better, faster, easier access to information. DIRS help to expand access, increase usability and effectiveness. They also help to establish new ways for individuals in using information for enhanced productivity in their endeavours. The application of the concept of Digital Information Resources (DIRs) into library functions and services have invariably changed the connotation of what an academic library stands for.

The current trends defined academic library by function rather than place which is the building. Digital Information Resources (DIRs) is the presence of printed information in a format only viewed and accessed through the use of ICT via electrical manipulations (Obaseki & Amune, 2009). This assertion indicated that a digital information resource connotes not only those information resources accessed only with the aid of computer, but also other forms of ICTs such as blackberry phones or Samsung galaxy phones and Ipad,

Shariful (2012), is of the view that Digital Information Resources (DIRs) are those resources that deal with both born electronic and digitized materials which can be either accessible from library's in house database or from the world-wide-web. The born electronic materials includes: e-books, e-journal, e-newspaper, e-magazine, e-projects, e-thesis, e-dissertations, e-reports, website, www-resources and other related materials which can be considered necessary by the users, researchers, information professionals or even by the library management itself. On the other hand, digitalized materials mean converting the materials from other formats into digital format.

Nkanu and Okon, (2010) referred to Digital Information Resources (DIRs) as the new wave of air blowing many libraries globally, simply because there is increasing amount of information now available in digital form and this is likely to have significant consequences for information retrieval. With digital libraries abstracts and indexes are available online and there is easy access to computer-held information, together with the possibility of including sound and video. Meaning that, for many other reference tools digital format has notable advantage over print.

Singh and Sharma (2002) stated that a majority of the digital scholarly publishers, trade publishers, information aggregators, vendors, and information disseminators, now-a-days, increasingly act globally to provide electronic information (e -information) on Internet. Singh and Sharma went further to say that Digital Information Resources (DIRs) include full text archives or databases of journals, books, patents, standards, or technical reports of a particular publisher or a group of publishers.

## Theoretical Framework

One theory in information science is useful for explaining how digital information resources are utilized. The theory is Technology Acceptance Model (TAM) propounded by Davis in 1989. The Technology Acceptance Model (TAM) is an information systems theory that models how users come to accept and use a technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it. These factors are behavioural intentions, attitude and perceived usefulness of the system, perceived ease of use of the system, individual intention and facilitating or organisation condition.

Technology Acceptance Model (TAM) is the most influential extensions of Ajzen and Fishbein's Theory of Reasoned Action (TRA) in the literature. He hypothesized that the attitude of a user toward a system was a major determinant of whether the user will actually use or reject the system. The attitude of the user, in turn, was considered to be influenced by two major beliefs: perceived usefulness and perceived ease of use having a direct influence on perceived usefulness.

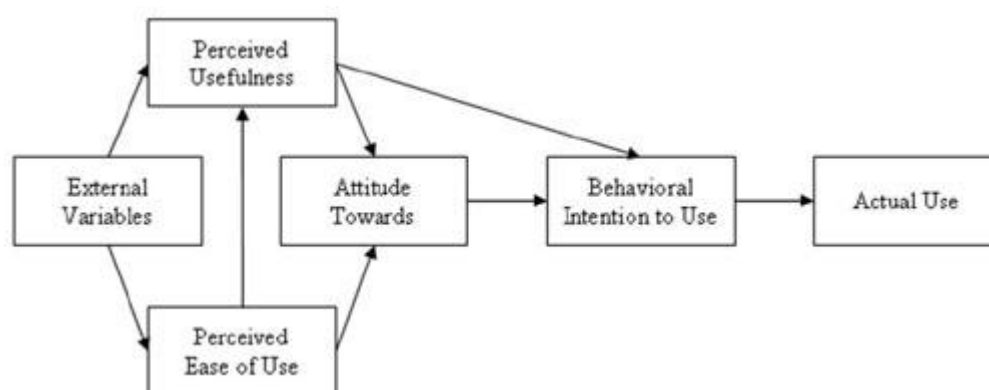


Figure 1. Original technology acceptance model (TAM) (Davis, 1989).

This theory is relevant to this paper “Conceptual and theoretical framework of digital information resources usage by undergraduates: Implication to higher institutions education in Delta and Edo of Nigeria: Implication to education.” in the following ways:

According to Davis, Perceived usefulness (PU) element as defined above is relevant to the study because undergraduates believe that using computer system connected them to local database or Internet. Phones and other electronic devices to search for information electronically enhance their academic activities than the traditional ways. That is students can read and search for information to do assignment and research faster with the use of technology.

Perceived ease-of-use (PEOU) is another element in the theory that is relevant to the study. The ability of students to accept and use electronic machine devices will ease their usefulness of digital Information Resources (DIRs) and learning becomes easier to them as well as influences their academic activities in their daily life. That is, efforts to search information in traditional ways are reduced automatically with the use of technology. The researcher adopted this theory because of its relationship to the problem under investigation.

### Use of Digital Information Resources (DIRs)

It is a known fact in this digital era that any student at the higher level who intends to better achieve and go further in academics should have the ability to explore the digital environment. Adeyinka, Adedeji, Ayen, and Omoba, (2008) stated that students' ability to find and retrieve information effectively is a transferable skill useful for their future life as well as enabling the positive and successful use of the digital resources while at school. Students' use of information systems can be in the form of communicating or posting of information or material by way of electronic mail, bulleting boards, world wide web or other such electronic tools (Mischnick, 2000).

Digital information resources serve as a motivating factor to students as it provides them opportunity to transmit, acquire or download, process and disseminate information on a subject of interest. Digital information resources offer today students greater opportunities that are quite different from their predecessors (Ray & Day, 2003). Other uses according to authors include the fact that “digital information resources are often faster than consulting print indexes, especially when searching retrospectively, and they are straight forward when wishing to use combination of keywords. They open up the possibility of searching multiple files at one time, a feat accomplished more easily than when using printed equivalents. It could be said that “improved data transmission facilities will go a long way to reduce the incessant hardship faced by students in the acquisition and generation of data which serves as the basis for research and academic performance improvement (Day& Bartle,2003). This is because the use of digital information by students of today enhance their performance in academic activities. Furthermore, Day and Bartle, (2003) revealed that the academic community has accepted that electronic information resources have an impact on their work. However, services currently available to academic staff and students are not being used to their full potential and some are hardly being used at all.

Waldman (2003), when drawing inference from Bandura's position, asserted that “students with high self-efficacy regarding computers would also be more likely to explore new technologies, software or databases. Additionally, they would be more likely, for example, to explore a library’s website and find that the library has specialized resources, and they might even try some searches on those resources without, or with less, prompting from professors or librarians and without necessary taking library workshops.” General user opinion towards the use of electronic information resources, in particular, CD-ROM, has been positive, with students enjoying using these sources and finding relatively few problems while using them.

## METHODOLOGY

This study adopted descriptive survey research design. The study was conducted in Federal and State University Libraries in Delta and Edo states in the south- south geopolitical zone of Nigeria. The Federal and State Universities in the zone are located in Abraka, Benin City, Ekpoma, and Ugbomro. The sample for the study comprised one thousand and eighty-eight hundred(1,088) users drawn from four universities. The selection of the four universities was based on the fact that they are government owned institutions and are in the position to follow the trend of digital information age because they are better equipped than private universities. Purposive sampling technique was used to select two universities from Delta and Edo states respectively. Proportionate stratified sampling technique was used to select respondents from each of the federal and state university libraries used for the study.

The instruments used for the collection of data was structured questionnaire and Thereafter the copies of the final version of the questionnaire were administered with the help of research assistant in each school to undergraduates of the library as at the time of administration. The data obtained for this study were analyzed and presented based on the research question and hypothesis that guided the study. Descriptive statistics was used to answer all the research questions and inferential statistics was used in testing the hypotheses. The research hypothesis were tested using Z- test method. Out of 1,088 questionnaires distributed, 972 was duly completed and returned. This shows 89.5% return rate.

## Analysis of Data

Table1: Mean scores(x) of extent of students use of digital information resources (DIRs) in the institutions.

<b>S/N Digital Information Resources</b>	<b>Mean</b>	<b>Remarks</b>
1. e- Projects	2.68	High Extent
2.e- Journals	2.60	High Extent
3.e- Reference materials	2.70	High Extent
4. e- Seminar Paper	2.67	High Extent
5. e- Books	2.62	High Extent
6. e- Newsletters	2.51	High Extent
7. e- Thesis	2.54	High Extent
8. e-Zines	2.06	Low extent
9. e- Conference papers	2.40	Low extent
10. e-Technical reports	2.49	Low extent
11.e- Grey_Document	2.17	Low extent
12.e- Conference proceedings	2.17	Low extent
13.e- Dissertation	2.36	Low extent

The result presented in table 1 shows that students use e- Projects; e- Journals; e-Reference materials; e-Seminar papers; e-Books; e- Newsletters; and e- Thesis to a high extent in the institutions, thus the mean scores of 2.68; 2.60; 2.70; 2.67; 2.62; 2.57; and 2.54 respectively. Undergraduates also use e-zines; e- Conference proceedings; e-Grey document; e-Dissertation; e-Conference papers; e-Technical to a low extent, in the institutions, thus the mean scores of 2.40, 2.49; 2.17; 2.06; 2. 17 and 2.36 respectively. A grand mean of 2.46 shows that students use Digital Information Resources in the University libraries to a low extent.

**Table 2:** Mean scores(X) of students on the constraint face by students in use DIRs

S/N	Digital Information Resources	Mean	Remarks
1.	Epileptic power supply	2.96	Agree
2.	None availability of online databases	2.69	Agree
3.	Inadequate or slow band width	2.68	Agree.
4.	Inadequate number of computers to access digital information resources in my library	2.57	Agree
5.	Network problems	2.63	Agree
6.	Lack of skills to access digital information resources in the both local /foreign databases of my library	2.64	Agree
7.	Lack of formal training in Internet use	2.68	Agree
8.	Server slowness	2.62	Agree
9.	Frequent breakdown	2.52	Agree

The result presented in table 2 shows that the respondents agreed that epileptic power supply; non-availability of online databases; inadequate number of computers to access digital information resources; inadequate bandwidth; Network problems; lack of skill to access digital information resources in local and foreign databases; Lack of formal training on internet use; Server slowness and frequent breakdown of digital resources are constraints to students effective use of digital information resources in University libraries, thus the mean scores of 2.96; 2.69; 2.68; 2.57; 2.63; 2.64; 2.68; 2.62; and 2.52 respectively.

This shows that the students agree that all the listed nine constraints for accessing digital information resources were encountered by them as they tried to access the digital information resources.

### Findings

Digital Information Resources available in University Libraries in Delta and Edo states are e-Project; e-Journals; e-Technical report; e-Reference materials; e- Conference proceedings; e-Zines; e-Books; e-Newsletters; e-Grey document; e-Thesis; and e-Dissertation. They are thirty-nine –million, , five hundred and forty-five thousand, seventy –four(39, 545074). With the exception of e-Conference papers that was not

available in the whole University Libraries, e- Books was found to be highest in number, while e- Newsletter was lowest in number when the digital information resources in the whole libraries are paved together according to type. The number of available digital information resources in the University libraries studied shows that the three University authorities of Delta State University, Abraka,(DELSU) University of Benin, Benin(UNIBEN) and Ambrose Ali University, Ekpoma(AUU) are well on -course in terms of provision of the digital information resources in the libraries, although there is need for attention concerning provision of e- Conference papers and provision of the digital information resources that are in small number in the libraries. Finding shows that DIRs are use to low extent in all the university libraries. The finding also shows negligence on the part of university management of Federal University of Petroleum Resources Library that have no digital information resources at all.

Constraints to students effective use of Digital Information Resources in the University Libraries are epileptic power supply; non-availability of online databases; inadequate number of computers to access digital information resources; inadequate bandwidth; Network problems; lack of skill to access digital information resources in local and foreign databases; Lack of formal training on internet use; Server slowness and frequent breakdown of digital resources.

### **Implications to higher institutions in Delta and Edo states of Nigeria.**

Some educational implications are derived from the results of this study and they include the following:

It has been empirically proved that three university libraries in Delta and Edo state used for the study made DIRs available for their undergraduates. This implies that the institutions moved with current trends of digital age in higher institution. These DIRs are available through free online databases and subscription. Hence, they should be consistency in their effort of development in the libraries. It has been proved that federal University Petroleum Resources do not have any of DIRs in the library for undergraduates. This implies that the governing council and library management of the institution have not done well to improve the digital library.

The study has revealed that the Digital Information Resources are used to low extent by undergraduates in UNIBEN; AAU; DELSU and FUPR. The implication is that undergraduates that utilized digital information resources to low extent will lag behind in their research, learning and assignment process in this digital age. The students could not compare themselves with other institutions of higher learning that use DIRs to a very high extent. The University libraries where the students use DIRs to low extent also could be regarded as traditional library because they have not incorporated full digital infrastructures and equipments for digital information resources which will be utilized by undergraduates in their studies.

The study also revealed that undergraduates from federal universities use DIRs more than undergraduate students of state universities in Delta and Edo states. This implies that the federal universities made DIRs available to their students than the state institutions. The study also reveals that there are numerous factors that hinder undergraduates to have access to DIRs. This implies that there is negligence on part of the four University authority study to look into the challenges faced by undergraduate students to use digital information resources for research, assignment and learning.

### **Conclusion**

Digital Information Resources (DIRs) are available in Ambrose Alli University Library (AAU) and John Harrison Library in University of Benin(UNIBEN) in Benin City. Delta State University Library (DELSU) has only four types of DIRs which include e-journals, e-proceedings, e-books and e-newsletters. Furthermore, DIRs are used to a moderate extent in AAU and UNIBEN libraries. In Delta State University Library the students make use of DIRs to low extents. Federal University Petroleum Resources Library (FUPR) do not have any of the DIRs available for their students and that is why their students use cybercafé for academic information. The numerous factors that hinder the students from accessing DIRs include epileptic power supply, none availability of online databases, inadequate or slow bandwidth; lack of formal training in the Internet use, network problems, and lack of skills to access DIRs in both local and foreign databases in their library as well as server slowness.



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