



OPERATING SYSTEM SOFTWARE AND CD-ROM DATABASES AS TOOLS FOR INFORMATION DELIVERY IN UNIVERSITY E-LIBRARIES IN SOUTH-SOUTH ZONE, NIGERIA

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ABSTRACT

The study was carried out to examine the availability of operating system software and CD-ROM databases as tools for information delivery in university e-libraries in South-South Zone Nigeria. The study was a survey. A sample size of 214 e-library staff in the study area was used for the study. Out of 214 structured questionnaires administered only 208 were retrieved giving a 97 per cent response rate and used for the study. Analysis of data was done using Simple Linear Regression analysis. The findings showed that, operating system software and CD-ROM databases significantly predict information delivery in University e-libraries. On the basis of the findings, it was recommended that; the government at the federal and state levels should endeavour to equipped e-libraries in the study area with up-to-date computer systems with relevant operating systems to facilitate information delivery; adequate CD-ROM databases should be subscribed to for onward delivery of information in e-libraries.

KEYWORDS: Operating system, CD-ROM databases, Information delivery, E-libraries, Nigeria.

INTRODUCTION

Electronic libraries (e-libraries) also known as digital libraries are established in Nigerian Universities to support the activities of the traditional or paper-based library in the delivery of information to its numerous users or patrons.

For these e-libraries to achieve the aim to which they were established, it is necessary for them to be equipped with up-to-date hardware and software infrastructure. Some of the hardware and software infrastructure needed in e-libraries include but not limited to good operating system software and the ability to have access to

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CD-ROM databases that may contain full-text databases and images in different fields of endeavour. Because of the challenge of robust internet connection faced in developing countries of the world, CD-ROM databases are very relevant in e-libraries in Nigeria because access to these databases can be achieved with little or no internet connectivity. When e-libraries are established and then neglected, the purpose to which these e-libraries were established, which is information delivery will be defeated. Information in different formats is needed by students and faculty to cater for their various information needs, which may include information for students' homework, projects, learning and research for faculty members.

Operating system is a set of programmes that control the execution of application programmes and act as an intermediary between a user of a computer and the computer hardware. It is a software that provides an environment for application programmes to run and also manages the computer hardware. The operating system makes the computer system suitable and effortless to use by the user. It enables efficient usage of the computer system as well as execute user programs and makes it easier for users to solve their problems in order to have access to unlimited information resources. For available computers in e-libraries to function properly, the right operating system has to be installed. If the computer systems are installed with operating systems that cannot meet the above stated objectives, then, the delivery of information in such e-libraries will be a bottleneck. Some examples of operating systems include; Windows, Windows/NT, OS/2, DOS, Unix and MacOS etc (Hussein, 2015).

The acronym CD-ROM stands for Compact Disk Read Only Memory. It is a compact disc that contain large amount of data including text and images. It measures up to 120mm in diameter. One unique feature of the CD-ROM is that it is easy to use and can be accessed with little or no internet connection. The CD-ROM technology is a technology that can meet various needs of libraries when information contain therein is properly designed especially in developing countries like Nigeria (Ogunsola, 2004). University e-libraries in Nigeria need CD-ROM databases for efficient delivery of information to its clients. Most databases are regularly updated and this can attract annual subscription. CD-ROMs do not

require a special software for them to function, therefore they can be used in areas with no internet connectivity. Most medical and health information are available on CD-ROMs such as Medline, African Health Line, AIDS line etc. (Kalbande, Subhash, & Golwal, 2018; Ogunjimi, Eyong & Offon). The importance of CD-ROM technology in information storage and delivery in University e-libraries in Nigeria cannot be overemphasized.

The South-south zone is one of the six geopolitical zones of Nigeria. It designates both a geographic and political region of the country's eastern coast. It comprises six federal and six state universities with both traditional and electronic libraries in each of these universities. In each of these university e-libraries, different operating system software are in use, there also exist CD-ROM databases that are used for storage and retrieval of information to its numerous clients.

STATEMENT OF THE PROBLEM

It has been observed that most e-libraries are not performing the original function to which they were established, which is information delivery to as many that may need it to achieve set objectives. The purpose to which e-libraries are established in universities is to provide information at all times to its teaming users or clients, which cut across researchers, students and lecturers. Observation shows that most computers available in university e-libraries in the study area are not installed with the right operating system software and therefore lack the capacity to deliver information. Also, most e-libraries do not subscribe to CD-ROM databases, which provide information with little or no internet connectivity. This study therefore sought to find out if operating system software and CD-ROM databases can significantly predict information delivery in university e-libraries in the study area and to proffer solutions where necessary.

Objectives of the study

The study was based on the following objectives:

- i. To find out whether availability of operating system software can predict the delivery of information in university e-libraries in South-south zone, Nigeria.
- ii. To determine whether availability of CD-ROM technology can predict the delivery of information in university e-libraries in South-south zone, Nigeria.

STATEMENTS OF HYPOTHESES

The hypotheses that guided the study include the following:

- i. Availability of operating system software does not significantly predict the delivery of information in university e-libraries in South-south zone, Nigeria.
- ii. Availability of CD-ROM databases does not significantly predict information delivery in university e-libraries in South-south zone, Nigeria.

REVIEW OF RELATED LITERATURE

Lee (2009), conducted a research on impact of modern operating systems to the societal development of computer technology. In the study, the researcher found out that operating system plays a vital role in correlation to the functioning of hardware components. The researcher explained that a computer needs an operating system in order to be called a computer otherwise, it is more or less equivalent to a mere gadget. An operating system acts as a director to the hard disk drives, RAM, CD-ROM and even the processor. The researcher further explained that the computer cannot be booted to desktop without an operating system, the RAM will not have any information to store temporarily when the computer does not boot to desktop and finally, the CD-ROM drives cannot be used to copy files, folders or document to or from a CD storage device. Mbah and Egbe (2021) opined that e-libraries in higher institutions play a central role in supporting higher education's core missions of research, teaching, learning and community development, therefore, it is paramount to provide necessary gadgets such as CD-ROM databases and the right operating system for information delivery to those who may need it.

Adnan (2003) advocated that an operating system provides services to programs and to users of those programs. It is provided by one environment for the execution of programs. The services provided by one operating system are difficult to understand because it encompasses so many functions to the computer system. Every computer must have an operating system to run other programs. For any application to be effectively installed into a computer, the computer needs to be already equipped with an operating system in order to provide an environment for the applications to run. All software applications are written to run on a particular operating system. A computer user may change operating system to

be able to run new software or take advantage of advanced features of new versions. An operating system manages all the basic functions of a computer. The operating system runs other programs such as word processing, or graphics editor, manages other storage of your own documents and coordinate the functions of the computer itself and all the devices connected to the computer.

Ntui and Eyong (2014) carried out a study aimed at finding out computer usage and its influence on students' study habits. The findings of the study revealed that usage of the computer system has a significant influence on students study habits. This is true because when computers are equipped with appropriate operating system software, information that can assists students in their academic activities will be timely delivered. Automation requires a lot of planning before a library can embark on it because it could be very expensive in terms of equipment, staff and user training. Before a library can embark on the computerization of its activities, the process must be well planned and designed. It is usual for system analysts to thoroughly analyse the needs of the library and then designed an appropriate computerised system. Because of the capability of the computer in speeding up many activities in the library, it is usual for libraries to embark on computerisation. There are many software applications for one single module of computerisation or integrated module. Depending on the capability of the library, some have selected only one type of service for computerisation while many have embarked on integrated computerisation. Therefore, the importance of operating system software cannot be overemphasized (Aina, 2004). A computer needs an operating system to control its operations and make it usable. A user interacts with a computer using the operating system as it provides many important facilities. A user of a modern computer uses a machine whose hardware is hidden by layers of software with features which include, besides those provided by its processor a number of functions provided by the operating system. This can lead to prompt delivery of information, which is the major function of any e-library.

Oyewusi and Oyeboade (2009) conducted an experimental research to find out ease of access and usage of library materials by students in a university of technology in Nigeria.

Simple random sampling technique was used for the study. Six hundred subjects were used as sample for the study, which included students that made use of the library every month. **Data was collected with the use of a questionnaire. The study was a survey and included students from year two to year four who make use of library materials. Simple percentages were used for data analysis through the use of SPSS. Background information gathered from the respondents indicated that two hundred and forty eight subjects representing 63.1 percent were male whereas one hundred and forty five subjects representing 36.9 percent were female. The result showed that two hundred and ninety seven subjects representing 75.6 percent acquired information from journals and textbooks whereas seventy nine subjects representing 20.1 percent acquired information through the use of the internet. The findings also showed that five respondents that is 1.3 percent made use of e-books, seven subjects that is 1.8 percent made use of e-journals and three subjects that 0.8 percent made use of databases. This finding shows that journals and text books were the ones that are consulted the most by students as compared to e-resources. Furthermore, the findings revealed that CD-ROMs were available while e-books, e-journals and internet were unavailable at the time the study was carried out.**

Kalbande, Subhash, and Golwal (2018) carried out a study to ascertain the use of CD-ROM databases in India. The study was a case study. The researchers found out that majority of users 275 (76.60%) got knowledge about CD-ROM databases through library staff. Followed by 125 (34.82%) users who became aware through friends, 89 (24.29%) users know about CD-ROM databases through observation and only 15 (4.18%) of library users became aware through bulletin board. According to the authors, respondents may select more than one checkbox, so percentages may add up to more than 100%. On frequency of usage of CD-ROM Databases Services, the study showed that 189 (52.65%) per cent of students were accessing and using CD-ROM databases every day, 87 (24.23%) twice in a week, 47 (13.09%) per cent weekly, 29(8.08%) per cent monthly and 7 (1.95%) occasionally.

On purpose of using CD-ROM databases, the study found that 162 (45.13%) respondents were using CD-ROM databases for keeping abreast of new developments purposes with first rank, 225 (62.67%) used CD-ROM databases for finding relevant information, 235(65.46%) of users used these CD-ROM databases to study and research, while 147 (40.95%) used it for career development. **The subjects were told to show the information technology equipment that were present and accessible in the library, the findings showed that 94.4 percent of the subjects found the photocopier ready for use whereas all the subjects agreed that e-databases, CCTV, Online Public Access Catalogue, electronic journals, etc. were not available for use. Three subjects representing 0.8 percent agreed that they have access to the CD-ROM databases in the library. This implies that users are aware of the availability of CD-ROM databases in e-libraries and are making adequate use of these databases to access information for their various uses.**

Khan (2011) carried out the study "Utilization of CD-ROM databases by the users' of Indian Institute of Technology-Kharagpur: A survey". This study used questionnaire, observation and informal interview to collect data. Out of 294 respondents that responded to the questionnaire, it was found that in respect to the awareness of CD-ROM databases 290 (98.64 %) users were aware about the CD-ROM databases provided by the library whereas 1.36% of respondents were not aware. On the frequency of using CD-ROM databases it was found that 38.10% users make use of CD-ROM databases daily whereas 20.75% users use CD-ROM databases twice in a week. About 19.39% users use it weekly. A very small percentage of users use CD-ROM databases (14.28%) monthly and 7.48% occasionally. The respondents were also asked to indicate the challenges faced while using CD-ROM databases. Most of the respondents (41.15%) suggested lack of training in using CDROM databases, while 31.29% users say that there is lack of trained staff to guide them. About 14.63% users replied that lack of maintenance of CD-ROM work station is a hindrance. They were also asked to indicate their level of satisfaction with the CD-ROM database service. The analysis showed that majority of the users (38.44%) are neither satisfied nor dissatisfied, whereas 31.30% users are satisfied and 12.24% are highly satisfied.

About 14.28% users indicated that they were dissatisfied and 3.74% are highly dissatisfied. The above shows that users have awareness of the presence of CD-ROM databases in e-libraries and actually make use of it. If the challenges highlighted above can be taken care of, then the dissatisfaction experienced by the users can be addressed to aid the delivery of information in e-libraries.

Bhatnagar (2004) carried out a study on "Search techniques for assessing CD-ROM databases". The researcher opined that having access to information stored in CD-ROM databases was much faster and more accurate than accessing same information in the traditional library. The advantages and disadvantages of usage of CD-ROM databases in libraries were also highlighted by the author. The author made some illustrations of CD-ROM databases, which included Ulrich's on disc from Directory, Ei Compendex Bibliographic database, and Emerald full-text database of journal articles. It was concluded that for libraries to meet up with its mission of provision of library services in an information technology age, they should make available these technologies for the users and the expertise needed to operate the technology to meet users' needs. This is a clear indication that CD-ROM technology has come to stay not as a substitute but a complement to the traditional library, and the earlier libraries in Nigeria embrace this technology, the better the provision of library services to meet with the information needs of its teeming users.

Clark and Bingham, (2006) asserted that CD-ROM technology goods are giving substitute to students as compared to the difficulties in

accessing online databases. There has been a movement according to Robert and Eyong (2015) from user to libraries as it concerns payment of charges making it free for the user to use the databases, and this has presented more questions as it has to do with library cost and the quality of databases. Librarians are now faced with hard and difficult questions concerning the prices, compatibility and search capabilities as more CD-ROM products become accessible in the market.

METHODOLOGY

The survey research design was used for this study. This research design enables a person to picture the exact condition of particular phenomena. According to Isangedighi, Joshua, Asim, and Ekuri, (2004) survey research design is directed towards determining the nature of a situation as it exists at the time of the investigation. The researcher adopted this approach because it allowed for the opinions and views of e-library staff to be gathered, in terms of operating system software/CD-ROM databases and information delivery and same be described as precisely as possible. There are six Federal Universities and six State Universities in South-south zone of Nigeria, each of these Universities have e-libraries equipped with CD-ROM databases and various operating systems. The population of the study consisted of all e-library staff in the study area, which automatically was used as the sample of the study, thereby making the study a census. The population and sample of the study are presented in Table1. Two hundred and fourteen (214) questionnaires were administered but only two hundred and eight (208) were retrieved and used for the study.

Table 1: Distribution of population and sample according to universities in the study area

S/N	University e-library	Population	Sample
1	University of Calabar e-library	15	15
2	University of Port-Harcourt e-library	27	27
3	Federal University, Otueke e-library	16	16
4	Federal University of Petroleum Resources e-library	25	25
5	University of Uyo e-library	27	27
6	University of Benin e-library	25	25
7	Cross River University of Technology e-library Akwa Ibom State University e-library	5	5
8	Rivers State University of Science and Technology e-library	20	20
9	Niger Delta University e-library	21	21
10	Delta State university e-library	8	8
11	Ambrose Ali University e-library	12	12
12		13	13
	Total	214	214

Source: Various e-libraries of the universities (2021/2022) academic session

RESULTS

Table 2: Demographic variables of respondents

Demographic variable	No. of respondents	Percentage (%)
Gender		
Male	150	72.1
Female	58	27.9
Total	208	100
Age		
16-25	13	6.3
26-35	75	36.1
36 and above	120	57.6
Total	208	100
Marital status		
Single	80	38.5
Married	120	57.7
Separated/Divorced	8	3.8
Total	208	100
Educational qualification		
OND/NCE	10	4.8
B.Sc/HND	160	76.9
M.Sc	25	12.0
Ph.D	13	6.3
Total	208	100

Source: Field Survey, 2022

The demographic variables of the respondents analyzed in the study include gender, age, marital status and educational qualification. The result in table 1 shows that most of the respondents were male (72.1%) while 27.9% were female. With regards to the age of the respondents, the results showed that majority of the respondents (57.6%) were 36 years and above, while 36.1% were between the age range of 26-35. Those in the age range of 16-25 received the lowest response (6.3%). The analysis of the results with respect to marital status indicated that most of the respondents were married (57.7%), while 38.5% were single and only 3.8% were divorced. Finally,

in respect to the educational qualification of the respondents, majority of them were first degree holders (76.9%) followed by M.Sc. holders (12.0%), Ph.D holders (6.3%) and OND/NCE was the least, which attracted (4.8%).

HYPOTHESIS ONE

Availability of operating system software does not significantly predict information delivery in university e-libraries. Simple regression analysis was employed to test this hypothesis. This is because regression analysis is commonly used for modeling the relationship between a single dependent variable and one or more predictors. Here simple linear regression is used because we have one predictor. The result of the analysis is presented in Table 3.

Table 3: Simple regression result of the prediction of availability of operating system software and information delivery in university e-libraries

R	R Square	Adjusted Square	R	Std. Error of the Estimate	
.293(a)	.086	.082		3.29820	
Sum of Squares		Df	Mean Square	F	Sig.
Regression	210.800	1	210.800	19.378	.000(a)
Residual	2240.893	206	10.878		
Total	2451.692	207			

a. Dependent Variable: information delivery in e-libraries

b. Predictors: (Constant), Operating system software

The simple regression analysis of the prediction of availability of operating system software on information delivery in e-libraries produced an adjusted coefficient of determination (R^2) of .082. This indicates that availability of operating system software accounted for 8.2% of the variation in information delivery in e-libraries in the study area. The F-value obtained from the regression table was 19.378 and the sig. value of .000 at the degree of freedom (df) 1 and 206. The implication of this result is that availability of operating system software is a significant predictor of information delivery in e-libraries in the various universities.

HYPOTHESIS TWO

Availability of CD-ROM databases does not significantly predict Information delivery in university e-libraries. Simple regression analysis was employed to test this hypothesis. This is because regression analysis is commonly used for modeling the relationship between a single dependent variable and one or more predictors. Here simple linear regression is used because we have one predictor. The result of the analysis is presented in Table 4.

Table 4: Simple regression result of the prediction of the availability of CD-ROM databases and information delivery in university e-libraries

R	R Square	Adjusted Square	R	Std. Error of the Estimate
.346(a)	.120	.115		3.23672

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	293.564	1	293.564	28.022	.000(a)
Residual	2158.128	206	10.476		
Total	2451.692	207			

a. Dependent Variable: information delivery in e-libraries

b. Predictors: (Constant), CD-ROM databases

The simple regression analysis of the prediction of CD-ROM databases on the information delivery in university e-libraries produced an adjusted coefficient of determination (R^2) of .115. This indicates that availability of CD-ROM databases accounted for 11.5% of the variation in information delivery in e-libraries in the study area. The F-value obtained from the regression table was 28.022 and the sig. value of .000 at the degree of freedom (df) 1 and 206. The implication of this result is that availability of CD-ROM databases is a significant predictor of information delivery in university e-libraries.

DISCUSSION OF FINDINGS

Availability of operating system software and information delivery

The result of this hypothesis revealed that availability of operating system software can significantly predict information delivery in university e-libraries in the study area. The implication of this finding is that a computer system without an operating system software is just like a piece of electronic gadget kept for decoration. Without the operating system software, hardware components cannot be driven by their software because only operating system software offers a platform for software to be installed and run. This finding is in line with Brianson and Peters (2008), who found out from their investigation into operating system and hardware maintenance that every computer hardware need an operating system to perform its duties and responsibilities, but where there is failure in operating system, all hardware components will not assume their responsibilities and hence, remain in a static and non-functioning state, which automatically impedes the flow of information delivery in university e-libraries.

Availability of CD-ROM databases and information delivery

The result of the second hypothesis indicated that availability of CD-ROM databases is a significant predictor of information delivery in university e-libraries in the study area. This is because CD-ROM databases provides for large volumes of information in a compact and manageable form as well as electronic search and retrieval capabilities for users. The CD-ROM has been developed as a medium for the storage and distribution of large volumes of computerised information. CD-ROM's have an indispensable role to play in the dissemination of electronic information and are finding a special place in the rapidly growing digital libraries. This finding is in line with Clark and Bingham, (2006) who asserted that CD-ROM databases goods are giving substitute to students as compared to the difficulties in accessing online databases. There has been a movement from user to libraries as it concerns payment of charges making it free for the user to use the databases, and this has presented more questions as it has to do with library cost and the quality of databases. Librarians are now faced with hard and difficult questions concerning the prices, compatibility and search capabilities as more CD-ROM products become accessible in the market.

CONCLUSION AND RECOMMENDATIONS

Based on the findings of the study, it was concluded that operating system software and CD-ROM databases have a significant influence on information delivery in University e-libraries in the study area. Computer systems without relevant operating system in e-libraries are just like toys used to decorate a child's room.

It is therefore expedient for university e-libraries to equip their computer systems with adequate operating system software for timely information delivery. In e-libraries where there is no robust and constant internet connectivity, CD-ROM databases come in handy. It is very necessary for university e-libraries to make available CD-ROM databases for timely information delivery. On the basis of the findings of this study, it is recommended that, the government at the federal and state levels should endeavour to equip University e-libraries with up-to-date computer systems with relevant operating systems to facilitate information delivery; adequate CD-ROM databases should be subscribed to for onward delivery of information in University e-libraries.

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