# Innovations

# Database Management System (DBMS): a strategy for emboldening accessibility and usage of information resources in public university libraries in Delta, Nigeria

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*Abstract*

*The use of DBMS enables proper organisation of information resources for easy accessibility and usage. However, studies have shown potential low usage of information resources indicating poor management hence this study to determine Database Management System (DBMS): a Strategy for Emboldening Accessibility and Usage of Information Resources in Public University Library in Delta, Nigeria. Six objective were set to determine the forms of DBMS adopted by libraries, database systems software used, hardware(s) used, how accessible the information resources are in the library, the extent to which information resources are used and how often patrons use resources. Descriptive survey design was adopted to determine the current status of the work. The population of the study comprised 4250 which are registered users of the public university libraries in Delta State. A sample of 170 which is 4% of the entire population was drawn using simple random sampling technique. The Instrument consist of question on nominal scale, four scale and fie scale questions. Some of the Instruments were developed by the researchers while some were from previous research article. The instruments were validated by other experts in the field. Descriptive and influential statistics were used to analysed data. A mean of 2.5 was used as criterion mean such that any item below 2.5 was rejected. Results shows that manual DBMS is mostly in applied, Some computer based developing libraries make use of software like CDIS/ISIS, SLAM, Oracle and X-LIB and the hard wares such as CD/DVD drive, pen drive, think client, server and external hard disc. There is a low extent of usage of e-resources, low frequency of usage of e- resources within the library. The study recommended that libraries should adopt the computerized DBMS for effective organisation and transparency of the information resources to encourage high access/usage of e-resources.*

*Keywords: 1.DBMS, 2.Accessibility,3. Usage, 4.Information, 5.Information resources, 6.Public University Library*

## Introduction

The effectiveness of a library as a custodian of knowledge in various formats in this era of information explosion lies in proper organization of such resources. In other words, unorganized information resources will lead to non accessibility and usability of library resources. Igere, Adomi and Nwosu (2020) noted that the library as an important part of any institution is meant to properly organize information resources. Information resources according to Muyiwa (2015) is known as sources (such as books, newspapers, computers, pamphlets etc) which bears information and appears in formats such as prints and electronics to fulfill the goal of the library by meeting needs of users. There is need to ensure these information resources either in print or electronic formats are properly organized. According to George and Makwae (2016), organisation of information resources is the provision of

names, title and subject which stand as surrogates to the actual information bearing resources to ensure users maximize the use of library at the appropriate time with information resources that are relevant. Supportably, Onwuchekwa (2011) stated that when a library is properly organized, it enables clienteles to locate information resources thereby making the library a clearing house for users. This definitely implies that library materials are to be properly organized for use despite the exponential growth of library resources in terms of publication. Onwuchekwa (2011) further affirmed that explosion of information resources and the growth of publications are major facts which call for immediate attention of proper organisation of information resources in the library. Furthermore, there is a compounded problem of non accessibility and usability of information which is as a result of unorganized repositories of information in this era of information explosion. This therefore calls for ways to ensure effective organisation of library resources such as the Database Management System (DBMS) which is a collection of various programmes put together to manage the structure of the database and control access to the stored data. Bhojaraju and Koganurmath (2014) described database system as computer base system that is meant to store (keep) records and maintain data or information to be retrieved for decision making. Individuals use database daily unknown to them and some of the databases are dictionaries, library catalogue, telephone directories etc. Database is a record created to store and retrieve files containing information such as the name of the author, title, publishers, place of publication, year of publication etc. Singh (2004) further stated that database is a replica of a library catalogue (cards) which displays the holdings of a library in a manual format and now in a computerized form known as the database management systems. Bhojaraju and Koganurmath categorized DBase 111 plus and CDS/ISIS as the software which could be applied to organize information. Singh (2004) also specified LibSys, Alice and Soul as examples of DBMS in library while Foxbase, Sybase, dBase, Infomix, etc are the general DBMS. These databases are meant to facilitate organisation, accessibility and easy retrieval of information resources for use which the manual may not be able to provide as a result of the influx of information.

Nwachukwu, Abdulsalami and Salami (2014) stated that accessibility is known as the extent to which it is easy and possible to get a particular need. It could also be viewed from the perspective of those who are disabled and are unable to get needed information except with the aid of some devices. Hence Igere (2020) stated that technology needed to be accepted globally to enhance accessibility of information resources. This is also where the various ways of organizing information resources now come in to see if they can help salvage the situation of non accessibility and usage of information resources. Though it has been noted by Igere (2015) that majority of libraries presently have adopted the computerized ways of providing information resources to their clientele but despite the use of various ways of organizing information resources in libraries, it has been observed that the problems of accessibility and usage of information resources keep excruciating hence, this study to determine how DBMS could be use to salvage difficulty in organisation of information resources leading to non accessibility and non usability of information.

**Statement of the Problems**

The aim of setting up a library can only be achieved when information resources are easily accessed, retrieved and utilized through proper organisation of the information or information resources. Observation has shown that library resources are difficult to access, retrieved and used to meet needs. This could be as a result of non organisation of information resources due to the influx of information or non application of the right organisation systems .hence, this study on Database Management System (DBMS): a strategy for emboldening accessibility and usage of information in university libraries, Delta State, Nigeria.

**Objectives of the Study**

The study is set to find out the following objectives
   1. To determine forms of DBMS adopted by libraries
   2. To find out database systems software used in libraries
   3. To find out the hardware(s) used in libraries?
   4. To find out how accessible information resources are in libraries
   5. To determine extent to which information resources is used

6. To ascertain how often patrons use the resources in the library

**Research Questions**
The following Research Questions were raised to guide this study
1. What are the various forms of DBMS adopted by libraries
2. What are the database systems software used in libraries
3. Which of these are the hardware(s) used in the library?
4. How accessible are information resources in libraries
5. To what extent are information resources used
6. How often do patrons use the resources in the library

**Hypothesis**
**Ho** There is no significant relationship between DBMS and accessibility of information resources in the library
**H1** There is no significant relationship between DBMS and use of information resources in the library
**H2** There is no significant relationship among DBMS, Accessibility and Use of information resources in the library

**Literature Review**
        The library is known as a store house of knowledge where patrons can easily access and use available information resources to meet their needs. The information resources available most especially in this present age of information explosion are meant to be organized as well as to expose what the library holds to users. According to Chase, Dygert, and Johnston (2000), there were limited information and the only difficulty experienced was on how to make enough of the information available to users. But today, there is information explosion and the problem is on how to access the relevant information for use. The reason for the difficulties experienced in accessibility and utilisation of information most especially online information is lack of standard ways of organizing the distribution of unlimited information which resulted to the use of the World Wide Web. Chase, Dygert, and Johnston described the web as a library with its books heaped together in particular position, not shelved and without title pages. In this particular situation, the only way to display the information resources to users for easy accessibility and usage is to make sure there is proper organisation of the information resources using information technology. Nwachukwu, Abdulsalami, and Salami (2014) opined that information resources such as books and non book materials could be revealed and be accessible to users through information technology and telecommunication which help to ward off the problems of cost, distance and usability interference. Various format of information resources such as print, non print (also known as audio visual resources) and electronic information resources can be accessible to users through proper organisation (Usoro, Umoren & Akwan 2018). Singh (2004) has also earlier stated that the information resources in the library are revealed to users as a result of proper organisation through library catalogue which is known as manual database management for easy accessibility and usage. Though, libraries have been practicing the manual form of organizing these information resources through library catalogue, the influx of information resources calls for a better and more reliable ways to ease organisation of large collections acquired. One of such ways is the application of DBMS which is known as an interrelated data put together to access the data. Singh stated that the manual Database management system has taken new dimensions which now apply the computerized system known as Data Base Management System (DBMS). The computerized DBMS plays important roles such as creating users access to stored data in a database, providing end users a single opportunity to view data and translate. Data stored could be validated by using databases languages such as Data Definition language (DDL) which is used to specify database schema, Data Manipulation Language (DML) is use in updating queries and update, SQL known as Structured Query Language. In essence SQL is used as a means of communication with the computerized database by posing queries and retrieving data from the database. DBMS is now regarded as software which helps organizations in centralizing data, managing data as well as providing easy access to programs. In order words, the computerized DBMS eases the job of the programmer by organizing large collections to ensure end user have knowledge of where information is stored to aid easy accessibility and usage within and outside the library (Azhar

Susanto 2019). Most libraries that are still practicing the manual DBMS are yet to be automated or digitized and some that are partially automated practice both the manual and computerized database management system.

A database management system is practiced most especially in libraries that are digitized since it has to do with computerized system. This now prompt several libraries into digitizing their libraries to ensure that library resources are organized for easy accessibility and use. According to Kumar, (2016), there has been a gradual move from the traditional ways of organizing information resources into computerized ways which has diverted libraries from the opinion of ownership into accessibility. In essence, DBMS has become inevitable in most libraries thereby transforming librarians into information specialists. Singh further stated that most modern libraries presently are applying computing power to manage their records to ensure users easily access information resources. It is a process whereby the entire stock of the library is in a computerized DBMS and searches could be made according to author, subject, title, class number through OPAC.  Also McGinty (2009) noted that majority of academic libraries now have website which direct clienteles to the wealth of their resources. However, some libraries are yet to see the need to create easy access to information resources through proper organisation by converting to DBMS either because the fund to acquire most of the hardware and software are not made available. In a study carried out by Ovigue, and Abdulsalami (2019), it was found that majority of the respondents with 33% attested to consultation of information resources in the library through the library staff showing manual operation of organizing information resources. Chowdhury (2012) stated that operating with DBMS is a problem to most libraries because they lack the needed hardware and software, unskilled personnel, insufficient fund, lack of maintenance, non adequate facilities to render services. This implies that DBMS are rightly functional with workable software and hardware, skilled personnel..

There are numerous databases used to ease organisation of information resources and some of them are Oracle, MySQL, PostgreSQL, RDM Server, Dbase, IBM DB2, GLAS, Apache, Informix, Access, Ingress. Kumar (2020) noted that one of the databases mostly used by individuals is MySQL because it is free, it allows changes in some areas of data handler, it allows efficient process of data, its user friendly.  The study of  Kumar (2016), revealed some of the software use in the library to be, Oracle , MySQL,  PostgreSQL, RDM Server, Dbase, IBM DB2  etc and it was found that  MySQL database management system is mostly in use with 45.92 as the percentage of respondents  because of its reliability by ensuring easy retrieval of information. It was noted that Structured Query Language (SQL) is said to be complete and could be used in expressing queries. Other software such as Oracle and Postgre SQL had 38.78% and 13.27% respectively. Hardware facilities are also part of DBMS. Some of the hardware facilities used along the software are Servers, Computers, External Hard Disc, Think Client, Pen Drive, CD/DVD Drive etc. the study of Kumar also revealed that CD/DVD computers 100%, Pen drive (88.78%) and server (74.49%) were the hardware available in the library. Both the hardware and software are to facilitate proper organisation of information resources in every library that is digitized. When information resources are properly organized, it is always easy to access and use.

Accessibility is known as the ability to get hold of something or find information either in it physical format (hard or soft copy) and as well get an understanding of what the resource entails. Either accessing the physical or knowledge of the content of the resource is considered in terms of accessibility to information. According to Burnett (2001), access to information is regarded as the ability to recognize and understand information physically, intellectually and socially. Muyiwa (2015) further noted that accessibility to information could be in physical and intellectual aspect. Physical access to information means having access to the structure containing the information which could be electronic gadget or documents bearing information. Furthermore, intellectual content of an information resource is known as understanding or being knowledgeable about the content of the information with consideration on factors such as understanding the language of the resource, educational background of the individual accessing the resource, technological literacy of the individual, cognitive ability, vocabulary and subjective views. In order words, these factors will help an individual to access most especially the content of an information resource. For example, if a patron has access to a physical form (either in hard or soft copy) of an information resource written in French, and do not understand the language of the resource, access is not yet complete until such information resources is understood to be meaningful to the user (Nwachukwu, Abdulsalami,  & Salami 2014). Hence, easy ways of accessibility to information resources which could be achieved

through proper organisation of information resource is needed because when library resources are not accessible, it is always frustrating. Hence, Unegbu, Lawal-Solarin,and Ladan, (2017) stated that the speed at which information is received is determined by accessibility. Access to information according to Anike (2019) can also be within an institution and outside the institution most especially for libraries that are digitized to access information resources outside the institution. In a study carried out by Nwachukwu, Abdulsalami, and Salami (2014) accessibility of information resources by respondents revealed 69(61%) for students while that of staff shows 45(39%) out of the total of 114 respondents sampled. Muyiwa also found that a great number of respondents access information resources through book, newspapers, journals and few access information through the internet. Onwukanjo and Joseph (2017) also carried out a study on Information Resources Availability and Accessibility on User Satisfaction and a particular question was raised to determine accessibility of information to users. It revealed that majority of the respondents with the figure 293(95%) are accessible to information resources. Few of the respondents with the figure 14(5%) indicated they do not have access to information resources. The study of Igere (2020) revealed that majority of the students easily access digital information resources. The study of Unegbu, Lawal-Solarin, and Ladan (2017) also found that students had access to special collections and there was no access to the electronic online resources in the school library. It could be deduced from past findings that most users had access to information resources but having access to information resources does not connote usage because in a situations where a user is able to access an information resource either in a hard or soft copy and could not decipher what is written therein, does not portray usage. Usage of information resources can be actualize when patrons need is meant.

Usage is defined by Nwankwo, Chukwu, Igbokwe, and Agbanu (2019) as the act, method or ways of employing something. It also means to put to service purposeful intention or the ability of individuals to do something for a set goal. Therefore usage as define by the researcher in this study could be regarded as the degree to which information resources are applied by patrons in meeting their needs. In relation to this study, Nwachukwu, Abdulsalami, and Salami (2014) define usage as the interaction which occurs between clienteles and information resources, staff and other resources in the library. Nwankwo, Chukwu, Igbokwe, and Agbanu (2019) stated that library usage connote perusal or browsing the stock of the library, asking for assistance from staff, searching for important information. It also connotes utilization of information resources and services in the library to proffer solution to personal or academic issues. Sejane, (2017) also noted that use is the frequency of access made by user on information resource. In essence, usage of information resources could mean the number of times or degree to which information resources are exploited by individuals to satisfy the purpose of use. A study by Nwafor, Okeke, and Urhiewhu (2018) revealed a high extent of usage of some of the electronic information resources such as e-journals, e- reference, e- books, e- theses and low extent on usage of e-zines, e- Conference proceedings, e-Grey document, e-Dissertation, e-Conference papers, e-Technical. It was also revealed by Onwukanjo and Joseph (2017) that majority of the respondent 278(91%) indicated they do not use the information resources accessed in the library while few of the respondents 29(9%) agreed that they make use of accessed information resources in the library. This is a clear indication that it is not all accessed information resources that are used in the library and this could be termed low extent of usage of information resources. Hence, there is need for proper organisation of information resources for proper usability.

When a library adopt the Database management system, resources in the library are properly managed or organized for easy accessibility and usage by providing interface between the data file on disk and programming by requesting process. Some of the objectives of the DBMS are to make accessibility to data easy and allow multiple usage (Gunjal & Koganurmath, 2003). Furthermore, DBMS is significant to users because it help in creating access, update and deletion of data or information. Despite the advantages attached to the usage of DBMS, Abubakar and Akpor (2017) study has shown that the usage of database system in universities is low. In order words, the frequency of usage of database system in Nigeria is low. This is affirmed by the study of Yebowaah and Plockey (2017) that majority of users access database system once in a month, once in a while and few utilizes the database system every week and twice a week. Also, the study of Eiriemiokhale (2020) revealed that users made use of database system on a rarely basis. Prabhakar and Rani (2017) cited in Maitato (2020) noted that the frequent usage of some of the e-resources are not within the library but outside the library. It could be deduce from previous studies that the usage of e-resources is on a low side within the library.

**Methodology**

The descriptive survey design was adopted for the study. The population of the study comprised 4250 which are registered users of the public university libraries in Delta State. The universities are, Delta State University, Abraka (DELSU), University of Delta Agbon, Osadebe University, Asaba, Delta State University of Science and Technology, Ozoro and Federal University of Petroleum and Engineering, Effurun (FUPRE). Though, Federal University of Petroleum and Engineering, Effurun (FUPRE) was not part of the study because of ASUU strike at the time of the study. This is represented on the table below.

**Population Table**

| S/N | Institutions | Population |
|---|---|---|
| 1 | Delta State University, Abraka | 3,510 |
| 2 | University of Delta Agbon, | 520 |
| 3 | Osadebe University, Asaba | 100 |
| 4 | Delta State University of Science and Technology, Ozoro | 120 |
| | Total | 4250 |

A sample of 170 which is 4% of the entire population was drawn and used for the study with the simple random sampling technique. The instrument for collecting data was the questionnaire. Some of the Instruments were developed by the researchers while some were from previous research article. The instruments were validated by other experts in the field. Data collected were analysed using descriptive and influential statistics at 0.05 level of significance. A mean of 2.5 was used as criterion mean such that any item below 2.5 was rejected and any item with 2.5 above was accepted.

**Discussion of Results**

Results from this study shows that 143 questionnaires were retrieved from the 170 questionnaires distributed to users. The retrieved questionnaires are also discussed in this section.

**Research Question 1:** Which of the following indicates the various forms of DBMS adopted in libraries?

## Table 1: Forms of DBMS adopted in libraries

| S/N | Forms of DBMS | Agree | % | Disagree | % |
|---|---|---|---|---|---|
| 1 | Manual DBMS | 88 | 61.54 | 55 | 38.46 |
| 2 | Computerized DBMS | 32 | 22.38 | 111 | 77.62 |
| 3 | Combination of manual and computerized DBMS | 53 | 37.06 | 90 | 62.94 |

Table 1 gave results on DBMS adopted in libraries. It was found that majority of the libraries with 88 (61.54) still adopts manual DBMS. Although a good number 53(37.06) agreed to the adoption of manual and computerized DBMS. A low percentage 32(22.38) adopted the use of computerized DBMS. On the other hand majority of the respondents 111 (77.62%) disagreed to the adoption of computerized DBMS and also 90(62.94) disagreed to the combination of manual and computerized DBMS. It could be concluded that the manual DBMS is mostly adopted by libraries. This finding is supported by Kumar, (2016) that most libraries still operate in manual system and are in the phase of computerizing the traditional library and services rendered.

**Research Question 2: What is the database systems software used in libraries?**

## Table 2: Database system software used in libraries

| S/N | DBMS Software | Agree | % | Disagree | % |
|---|---|---|---|---|---|
| 1 | Oracle | 20 | 13.97 | 123 | 86.01 |
| 2 | MYSQL | 23 | 16.08 | 120 | 83.92 |
| 3 | PostgreSQL | 0 | - | 143 | 100 |
| 4 | RDM Server | 13 | 9.09 | 130 | 90.91 |
| 5 | Dbase | 11 | 7.69 | 132 | 92.31 |
| 6 | IBM DB2 | 3 | 2.10 | 140 | 97.90 |
| 7 | SLAM | 30 | 20.98 | 113 | 79.02 |
| 8 | GLAS | 25 | 17.48 | 118 | 82.52 |
| 9 | CDIS/ISIS | 35 | 24.48 | 108 | 75.52 |
| 10 | X-LIB | 20 | 13.97 | 123 | 86.01 |
| 11 | Others | 10 | 6.99 | 133 | 93.01 |

Table 2 revealed that CDIS/ISIS with a percentage of 24.48 had the highest software utilized in the library. SLAM, Oracle and X-LIB with the percentage of 20.98, 13.97 and 13.97 respectively were also usage. This shows that few of libraries use the software sampled. Indicating most libraries are still in the process of converting to computerized DBMS hence the usage of software is low. This relate to the study of Kumar (2016) that Oracle, MySQL, PostgreSQL, RDM Server, Dbase, IBM DB2 are the software used with MySQL which had the highest percentage of 45.92 and one of the sampled software scored above 50% .

## Question 3 for staff only
**Research Question 3: Which of these are the hardware(s) used in libraries?**

## Table 3: Hardware used in libraries

| S/N | Hardware used | Agree | % | Disagree | % |
|---|---|---|---|---|---|
| 1 | Servers, | 28 | 19.58 | 115 | 80.42 |
| 2 | External hard disc | 25 | 17.48 | 118 | 82.52 |
| 3 | Think client | 28 | 19.58 | 115 | 80.42 |
| 4 | Pen Drive | 30 | 20.98 | 113 | 79.92 |
| 5 | CD/DVD Drive | 94 | 65.73 | 49 | 34.27 |
| 6 | Others | 40 | 27.97 | 103 | 72.03 |

Table 3 shows that CD/DVD drive with 65.73% ranked the highest for hardware used in libraries. Other hardware such as pen drive, think client, server and external hard disc had the percentage of 20.98, 19.58, 19.58 and 17.48 respectively was also used in libraries. This is in line with the study of Kumar (2016) with CD/DVD computers which ranked to 100%, Pen drive 88.78% and server 74.49% as hardware.

**Research Question 4: How accessible are information resources in the libraries**

## Table 4: How accessible information resources are in the libraries

| S/N | Accessibility of information resources | Very Accessible | Accessible | Fairly Accessible | Never Accessible | Don't know | $\bar{x}$ |
|---|---|---|---|---|---|---|---|
| 1 | Printed information resources | 80 | 49 | 9 | 5 | - | 4.64 |
| 2 | Audio& visual information resources | 10 | 10 | 30 | 70 | 23 | 2.40 |
| 3 | Internet information resources | 10 | 10 | 23 | 70 | 30 | 2.31 |

Table 4 revealed accessibility of information resources in libraries. It was shown that printed information resources with the mean score of 4.64 ranked the highest accessible resources. Audio and visual information resources had the mean score of 2.40 and internet information resources had the mean score of 2.31 which is lower than the criterion mean of 2.50. Printed information resources are therefore more accessible because it had the mean score of 4.64 which is higher than the criterion mean of 2.50. This is related to the study of Onwukanjo and Joseph (2017) which revealed that about 95% of the respondents agreed to high access of information resources. Muyiwa also found a high access to printed library resources. On the contrary, the study of Igere (2015) revealed a high access to digital library resources. This is an indication that most of public university libraries in Delta State still operate on the manual form of organizing information resources.

**Research Question 5: To what extent are the information resources used?**

 VHE - Very   High Extent, HE- High Extent, LE- Low Extent, VLE- Very Low Extent

**Table 5: Extent to which information resources are used**

| S/N | Usage of information resources | VHE | HE | LE | VLE | $\bar{x}$ |
|---|---|---|---|---|---|---|
| A. | **Printed information resources** | | | | | |
| 1 | I only browse through the shelves in the library | 30 | 44 | 33 | 36 | 2.48 |
| 2 | I personally search for information resources for usage in the library for personal interest | 30 | 20 | 38 | 55 | 2.17 |
| 3 | I search for information resources in the library and use them for my academic works | 30 | 33 | 35 | 45 | 2.36 |
| 4 | I do not use the information resources in the library | 40 | 30 | 40 | 33 | 2.54 |
| 5 | The information resources in the library do not meet my academic needs | 30 | 44 | 33 | 36 | 2.48 |
| 6 | There are no current information resources to meet my academic work | 33 | 30 | 50 | 30 | 2.46 |
| | Aggregate | | | | | 2.42 |
| B | **Audio & visual information resources** | | | | | |
| 7 | I only browse for audio and visual resources in the library | 34 | 34 | 40 | 35 | 2.47 |
| 8 | I personally search for audio and visual resources for usage in the library for personal interest | 20 | 30 | 36 | 57 | 2.09 |
| 9 | I search for audio and visual resources in the library and use them for my academic works | 20 | 23 | 43 | 57 | 2.04 |
| 10 | I do not use the audio and visual resources in the library | 30 | 50 | 30 | 33 | 2.75 |
| 11 | Audio and visual resources in the library do not meet my academic needs | 39 | 35 | 25 | 44 | 2.48 |
| 12 | There are no current audio and visual information resources to meet my academic work | 35 | 30 | 46 | 32 | 2.48 |
| | Aggregate | | | | | 2.39 |
| C | **Internet information resources** | | | | | |
| 13 | I only browse for internet information resources | 24 | 25 | 54 | 40 | 2.23 |
| 14 | I personally search internet resources for personal interest | 18 | 23 | 43 | 59 | 2.00 |
| 15 | I search for internet resources in the library and use them for my academic works | 24 | 26 | 47 | 46 | 2.20 |
| 16 | I do not use the internet resources in the library | 35 | 55 | 30 | 23 | 2.71 |
| 17 | The internet resources in the library do not meet my academic needs | 39 | 49 | 25 | 30 | 2.63 |
| 18 | The information resources in the library are not online to access | 37 | 30 | 46 | 30 | 2.52 |

| | | | | | |
|---|---|---|---|---|---|
| by students | | | | | |
| Aggregate | | | | | 2.38 |

Table 5 is on extent to which library resources were used. The aggregate scores for all sampled information resources used in the library revealed low extent of usage. An aggregate score of 2.46 was realized for printed information resources, audio and visual information resources revealed 2.39 while the aggregate score for the extent to which internet information resource are used is 2.39. This therefore shows that since, none of the aggregate mean score is above 2.50 which is the criterion mean, it therefore signifies that the resources had low extent of usage. This is related to the study of Onwukanjo and Joseph (2017) that about 91% of the respondents in their findings who access information resources do not make use of them. On the contrary, Nwafor, Okeke, and Urhiewhu (2018) found that extent of usage of information resources which cut across book and non book materials is high.

**Question 6. How often do you use the resources in the library**

**Table 6: How often Students use the resources in the library**

| S/N | Usage of information resources | Very Often | Often | Occasionally | Rarely | Not at all | $\bar{x}$ |
|---|---|---|---|---|---|---|---|
| 1 | Printed information resources | 20 | 35 | 40 | 35 | 13 | 3.10 |
| 2 | Audio & visual information resources | 12 | 21 | 20 | 55 | 35 | 2.44 |
| 3 | Internet information resources | 18 | 20 | 23 | 26 | 56 | 2.42 |

Table 6 indicated that the users often use printed library resources with a mean score of 3.10 which is higher than the criterion mean of 2.50. Other information resources such as audio visual and internet resources with the mean score of 2.44 and 2.42 respectively were not often used as the mean score calculated is lower than the criterion mean of 2.50. In other words. Printed information resources are often used. This is in line with the study of Eiriemiokhale (2020) that information resources were rarely used.

**Hypothesis One:** There is no significant relationship between DBMS and accessibility of information resources in the library

**Table 7: Correlation between DBMS and Accessibility of Information Resources in the Library**

| | | DBMS | Accessibility of Information Resources |
|---|---|---|---|
| DBMS | Pearson Correlation | 1 | . 245** |
| | Sig. (2-tailed) | | .003 |
| | N | 143 | 143 |
| Accessibility of Information Resources | Pearson Correlation | .245** | 1 |
| | Sig. (2-tailed) | .003 | |
| | N | 143 | 143 |

**α =0.05**

Data in Table 7 reveals the correlation between DBMS and accessibility of information resources in the library amongst public university library students in Delta, Nigeria. The result reveals that the correlation coefficient r is .245 which indicates that there is a positive relationship between DBMS and accessibility of information resources. While the P-value is .003 which is lesser than the alpha level of 0.05. Therefore, the null hypothesis stating that there is no significant relationship between DBMS and accessibility of information resources in the

library is rejected. The conclusion was reached that, a significant relationship exists between DBMS and accessibility of information resources in the library amongst public university library students in Delta, Nigeria.

**Hypothesis Two:** There is no significant relationship between DBMS and use of information resources in the library

**Table 8: Correlation between DBMS and Use of Information Resources in the Library**

|  |  | DBMS | Use of Information Resources |
|---|---|---|---|
| DBMS | Pearson Correlation | 1 | . 337** |
|  | Sig. (2-tailed) |  | .000 |
|  | N | 143 | 143 |
| Use of Information Resources | Pearson Correlation | .337** | 1 |
|  | Sig. (2-tailed) | .000 |  |
|  | N | 143 | 143 |

α =0.05

Data in Table 8 reveals the correlation between DBMS and use of information resources in the library amongst public university library students in Delta, Nigeria. The result reveals that the correlation coefficient r is .337 which indicates that there is a positive relationship between DBMS and use of information resources. While the P-value is .000 which is lesser than the alpha level of 0.05. Therefore, the null hypothesis stating that there is no significant relationship between DBMS and use of information resources in the library is rejected. The conclusion was reached that, a significant relationship exists between DBMS and use of information resources in the library amongst public university library students in Delta, Nigeria.

**Hypothesis Three:** There is no significant relationship among DBMS, Accessibility and Use of information resources in the library

**Table 9: Regression Analysis on DBMS, Accessibility, and Use of Library Resources in the Library**

| Model | R | $R^2$ | Sum of Squares | Df | Mean Square | Sig. |
|---|---|---|---|---|---|---|
| Regression |  |  | 317.474 | 2 | 158.737 | .000^b |
| Residual | .417^a | .175 | 1491.981 | 140 | 10.657 |  |
| Total |  |  | 1809.455 | 142 |  |  |

a. Dependent Variable: DBMS                                                                 b.Predictors: (Constant), Accessibility, Use of library resources

Table 9 reveals that the R-value which represents the simple correlation is .417 (.417×100=41.7%) and this indicates a high degree of correlation between the variables. Also, the $R^2$ value which represents how much of the total variation of the dependent variable (DBMS) can be explained by the independent variables (accessibility and use of library resources) is .175 (.175×100=17.5%) That is 17.5% can also be explained that a relationship exist among the variables. This means that an increase or decrease in the independent variables may lead to a corresponding increase or decrease in the dependent variable. Taking a look at the regression row where we have the significant level, the p-value of .000 is lower than 0.05, which indicates that the regression model statistically/ significantly predicts the outcome variable. Therefore, the null hypothesis, which stated that there is no significant relationship among DBMS, accessibility and use of information resources in the library amongst public university library students in Delta, Nigeria, is rejected, indicating a positively significant relationship exists among DBMS, accessibility and use of information resources in the library. The conclusion was reached that accessibility and use

of information resources jointly influence the application of DBMS by public university library students in Delta, Nigeria.

**Conclusion**
With the advent of technology and influx of information resources, it is expected that there these resources be greatly managed with these technology for easy accessibility and regular usage. It has been revealed in the study that the manual DBMS is mostly in used by libraries. Some of the libraries that are in the process of converting to computerized DBMS utilises software such as CDIS/ISIS with a SLAM, Oracle and X-LIB and hard wares such as CD/DVD drive, pen drive, think client, server and external hard disc. The study has also shown a low extent of usage of e-resources, low frequency of usage and a high access to printed resources in the library and not e-resources within, there is a significant relationship between DBMS and accessibility of information resources, and use of information resource. In order words, there is a joint influence on accessibility, usage and DBMS.

**Recommendations**
The following recommendations were drawn from the findings of this study.
1. Libraries should adopt the computerized DBMS for effective organisation of information resources in this era of influx of information. This will bring about the transparency of the resources in the library.
2. Libraries should digitize their libraries to encourage high accessibility and utilisation of e-resources.

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