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## Perception and Usage Pattern of e-Resources for Enhanced Academic Learning among Undergraduates in Adeyemi Federal University of Education, Ondo, Nigeria

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**Abstract:** *The study is on Perception and Usage Pattern of e-Resources for Enhanced Academic Learning among Undergraduates in Adeyemi Federal University of Education, Ondo, Nigeria. The survey research design was adopted for the study. The study population consisted of Adeyemi Federal University of Education (AFUED) Undergraduates. Structured questionnaire was developed for the study and used for the data collection. A sample size of 100 students was purposively chosen as the respondents of the study. AFUED undergraduate students hold a strongly positive perception of electronic information resources for learning, with all eight items exceeding the 2.50 decision threshold. The statement that e-resources provide more current and updated information than printed materials recorded the highest individual mean ( $\bar{x} = 4.10$ ,  $SD = 0.88$ ), indicating a strong consensus that the currency of e-resources is their most valued attribute. Close behind were statements affirming personal motivation to use e-resources more ( $\bar{x} = 4.01$ ,  $SD = 0.91$ ) and confidence in e-resources as the best tool for information provision ( $\bar{x} = 3.98$ ,  $SD = 0.91$ ). Students also strongly agreed that they gain a lot from using e-resources ( $\bar{x} = 3.96$ ,  $SD = 0.90$ ), and that e-resources facilitate quick access to needed information ( $\bar{x} = 3.90$ ,  $SD = 0.89$ ) and make study easier ( $\bar{x} = 3.90$ ,  $SD = 0.90$ ). Perceptions of the value and ease of use of e-resources ( $\bar{x} = 3.78$ ,  $SD = 0.90$ ) and of personal exposure to e-resources ( $\bar{x} = 3.81$ ,  $SD = 0.91$ ) rounded out the strongly positive pattern. The results reveal that all six barriers presented were strongly affirmed by respondents, with every item recording a mean score exceeding the decision threshold. High cost of access attracted the highest mean ( $\bar{x} = 4.22$ ,  $SD = 0.96$ ), identifying financial barriers as the most critical impediment to e-resource use among AFUED undergraduates. Unreliable internet connectivity ranked second ( $\bar{x} = 4.17$ ,  $SD = 0.95$ ), a finding that underscores the persistent infrastructure challenge facing Nigerian universities. The surfeit of irrelevant information on the internet was also strongly affirmed ( $\bar{x} = 4.10$ ,  $SD = 0.95$ ), suggesting that information overload and quality discrimination constitute a significant challenge alongside access barriers. Lack of internet access to web-based information resources ( $\bar{x} = 3.73$ ,  $SD = 1.00$ ) and inability to evaluate the usefulness of web-gathered information ( $\bar{x} = 3.70$ ,  $SD = 0.98$ ) were affirmed at moderately high levels, indicating that both physical access and evaluative information literacy remain substantial challenges. Lack of IT knowledge to effectively utilise e-resources ( $\bar{x} = 3.48$ ,  $SD = 1.04$ ), while recording the lowest mean in this section, still exceeded the threshold and remains a meaningful barrier.*

**Keywords:** perception, usage, pattern, e-resources, enhanced academic learning, undergraduates, Adeyemi Federal University of Education, Ondo, Nigeria

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## INTRODUCTION

An electronic resource according to Ashikuzzaman,(2014) in Ugwuja and Udem (2021) is defined as a resource which require computer access or any electronic product that delivers a collection of data, be it text referring to full text databases, electronic journals, image collections, other multimedia products and numerical and graphical or time based commercially available title has been published with the aim to being marketed. This may be delivered on CD ROM, on tape, via internet etc. Over the past few years, a number of techniques and related standards have been developed which allow documents to be created and distributed in electronic form. Hence to cope with the present situation, librarians are shifting towards new media, namely electronic information resources for their collection development. The e-resources on magnetic and optical media have a vast impact on the collections of university libraries. These are more useful due to internet capabilities for manipulation and searching. Providing information access is cheaper to acquiring information resources, savings and maintenance and sometimes the electronic form is the only alternative. Ashikuzzaman also listed some characteristics of electronic information resources they include: Access to every document by anyone from anywhere. Retrieval of e- resources is quicker than print resources. The users can be guided to document by providing a link easy to search the text. In electronic environment the interaction between users and libraries is frequent.

Bhat, and Gupta,(2021) in Charak, Singh&Singh (2023) asserted that E-resources or electronic resources are those information resources that are provided in an online mode through a computer network. E-resources can also be called online information resources. The materials and the resources which are provided to us by the library in a compact physical form are now being replaced by the online form of resources like electronic books, electronic journals, bibliographic databases, electronic thesis and dissertations, and electronic newspapers, electronic reports, and various subject gateways. Electronic resources are also available in the form of magazines, articles, encyclopedias, newsletters, etc. Electronic resources can be made [available] through subscription mode by paying a certain amount of money or for free via the internet. CD ROMs, DVDs, digital libraries, electronic mail data, OPAC, institutional repository system, E-guides, web search engines, E-reference, E-zine, USENET, Listservs, FAQs, etc. also contribute to the availability of various electronic resources.

Electronic resources as described by AACR2, (2002) in Ugwuja and Udem (2021) as any work encoded and made available for access through the use of a computer which includes electronic data available by: Remote access (electronic resources) refers to the use of electronic resources via computer networks. Direct access (fixed media): refers to the use of electronic resources via carriers (e.g. discs/disks, cassettes, cartridges) designed to be inserted into a computerized device or its auxiliary equipment. The access to electronic information resources in academic libraries and among university students is rapidly increasing as a result of the massive adoption of information and communication technology. Electronic information resources in libraries are considered essential part of modern society. This is because they play a very important in education. The provision of electronic information resources and services in libraries is important to any educational program that intends to achieve objectives that is in line with the

present day to day global best practices. Electronic information resources (EIR) are now recognized as being of greatest importance to academic libraries. The library is obviously the source of power and knowledge in higher education and research. The use of library is a matter of concern to students, teachers and researchers. The exponential growth of literature often creates problems for them to access appropriate literature and their use. The problem has, however considerably been resolved with the help of information and communication technology (ICT). The use of information technology for management and handling of information and data has grown significantly even in many least-developed countries despite the economic constraints.

Gupta (2011), Zimerman, (2010) ,Kapor (2010), and Shamsul ( 2017) in Ugwuja and Udem (2021) expressed that the use of information technology in libraries has been profoundly affecting all aspects of information acquisition, storage and transfer. Its magnificent development has dramatically changed the mode of library and information services. Computer based communications have not only widened the access to information and help establish linkages the professional colleagues and friends elsewhere, it has extensively facilitated message transmission, transfer and exchange of files and text, uploading/downloading database access interactive service, provision of bulletin boards and newsletters, job submission and execution, teleconferencing, file ordering, interlibrary loans, creating user profiles, consolidation and repacking of information for specific needs, dissemination of information of information and so on. The present supply of electronic information resources is made of a range of products that may exist in different forms such as CD-ROMs and resources available on the internet such as online databases, web pages e.t.c and they provide library with vast resources for their user population. The information in the web is structured to facilitate browsing. It provides access to quality control electronic information resources such as e-journals, e-books, e-databases e.t.c. Each technological development in library electronic Information resources during the 20th century was intended to make access to resources more direct, convenient and timely for the user. The implementation of electronic information resources made the Library growing organism, as libraries adopted processes and recognized staff repeatedly to accommodate the changes inherent in the use of constantly changing technology.

Nunberg,(2011),Ojo-Igbinoba,(2013) in Ugwuja and Udem (2021) opined that electronics information resources and services in libraries become necessary because of large number of users. He also stated growth in date usage leads to error and delays when manual systems are applied. The above assertion gives concise but comprehensive explanation of the various forms of electronic information resources and services. Thus, electronic information resources are vital, and they are currently the back bone of any dynamic collection, but most electronic information resources such as a full text databases and electronic books are not publicly available free of charge and therefore they are expensive. Today librarians are very much concern about their effective use. electronic information resources is the information stored in a medium which requires an electronic device to read its content which is in different electronic media such as tapes, floppies, radios etc. which can be retrieved with the help of other electronic devices like computers. The use of electronic information resources and services in a library also makes it possible for library staff to discover new information to develop the special gifts and talents hidden in each student, thereby assisting him/ her to build a career.

Lynch, (2000) states in Ugwuja and Udem (2021) that electronic information resources in libraries save time and effort than resources in the manual systems. It permits access to records, facilitates wider access to information, increases access to resources and allows easier editing of information. Basically, (Eveland & Dunwoody, 2001; Anuradha & Usha, 2006; Carlock & Perry, 2008) in Tella, Oseni, Oguntayo, & Akanbi, (2018) asserted that it is of great importance to also determine undergraduates' perception of e-books, which significantly judge and show the usage pattern. Perception is the insight, idea or opinion someone have about something which can be a negative or positive idea. For example, e-book readers have trouble estimating the length of sentences. There is also the perception that graphics or tables are harder to read on screen than on paper. Some studies have also indicated that the positive perception of e-books is associated with accessibility and availability. Talking about e-book usage by users, the level of perception of e-book by the user which could be negative or positive perception will have great effect and influence on the usage.

Electronic information resources (EIRs) according to Obaseki and Amune, (2009) in Ugwuja and Udem (2021) is the presence of printed information in a format only viewed and accessed through the ICT via electrical manipulations. This assertion indicated that an electronic information resource connotes not only those information resource accessed only with the aid of computer, but also other forms of ICTs such as blackberry phones or android phones and Ipad. For any academic library to thrive in this information age, the library irrespective of the size of its collection must embrace information communication technology. Electronic information resources are also referred to as the new wave of air blowing many libraries globally, simply because there is increasing amount of information retrieval. With electronic 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. Many other reference tools, electronic format has notable advantage over print. Electronic resources are invaluable research tools that complement the print-based resources in a traditional library setting.

Commenting on the merits of electronic resources, Binu (2020) infer in Frimpong&Addo,(2020) that there is access to information that could have been restricted to the user as a result of geographical location or finances. Also, the user has access to more current information as well as the provision of extensive links to extra resources linked contents. (Rafi et al. 2019; Lo et al. 2017) in Frimpong&Addo,(2020) opined that this rapid advent and development of electronic resources consequently make it possible to envisage radically varied ways of arranging the collections and services the library has conventionally provided. Whereas the most libraries approach a peak in funding collection development, these innovative technologies offer possible ways of mitigating costs and revolutionizing ways to access information.

### **Research Objectives**

The major Objective of this research is to investigate the perception and Usage Pattern of E-Resources among Undergraduates in Adeyemi Federal University of Education (AFUED), Ondo. The specific purposes that the work sorts to find out are as follows:

1. To determine the perception of Undergraduates in AFUED on the use of electronic information resources for learning.

2. To assess the extent of use of electronic information resources for learning among AFUED undergraduates.
3. To identify the perceived barriers by students on the use of electronic information resources for learning.
4. To proffer solutions to the perceived barriers to the use of electronic information resources for learning among AFUED Undergraduates.

### **Research Questions**

1. What is the perception of AFUED Undergraduates on the use of electronic information resources for Learning?
2. What is the extent of use of electronic information resources for Learning among AFUED undergraduates?
3. What are the perceived barriers to the use of electronic information resources for learning among AFUED undergraduates?
4. What are the proffered solutions to the perceived barriers on the use of electronic information resources for learning among AFUED Undergraduates.

### **METHODOLOGY**

The survey research design was adopted for the study. The study population consisted of Adeyemi Federal University of Education (AFUED) Undergraduates. Structured questionnaire was developed for the study and used for the data collection. The copies of the questionnaire were distributed to undergraduate students in the Various Schools in the University. The researchers collected the data through face-to-face administration of questionnaire. This involves going to the various departments of the faculties to administer the questionnaire and collecting them back at the same time. A sample size of 100 students was purposively chosen as the respondents of the study.

### **LITERATURE REVIEW**

Universities engage in teaching, scholarship, and research, in the various fields of learning and in order to accomplish these objectives, academic libraries play prominent and indispensable roles. Libraries in universities are the nerve centre around which scholarship revolves as they play crucial roles in provision of information resources necessary for that purpose. Technological advances influence the way information is handled in academic libraries and service delivery. The benefits of technological advances are felt by libraries in the area of communication technology, computing technology, and mass storage. There are also some of the areas of continuous development that reshape the way the libraries deliver their services. Prominent among these are electronic resources and services. Electronic resources represent an increasingly important component of libraries (Alawiye, Amusa, Ajiboye& Adegbaye 2016). IFLA (2012) described in Alawiye, Amusa, Ajiboye& Adegbaye (2016) electronic resources as those materials that require computer access, whether through a personal computer, mainframe, or handheld mobile devices, and may be accessed remotely via the Internet or locally.

Furthermore, Oyedun (2007) as stated in Alawiye, Amusa, Ajiboye & Adegbaye (2016) that electronic resources are facilities that assist the librarians to offer quick, adequate and efficient services to their patron. This also helps Awareness, Use, and Perceived Influence of Electronic Resources on Studies among Students of them to meet the diverse needs of their patrons. Libraries are now being described as traditional, hybrid, digital or electronic due to the influence of electronic resources. The electronic resources utilized by library to provide services to the users are CD-ROM, the Internet, and all webbased resource which offer a variety of reference and literary sources. These electronic resources provide off-line and online access to information by CD-ROM databases, the Internet as well as online databases in various disciplines. The library engages in procurement and organization of relevant text books, e-journals, newspapers and magazines for the use of its users. Information and telecommunication technology (ICT) has impacted and expanded the scope of these services and functions of the library and afforded it veritable means of information delivery.

Today, the library has electronic library which provides access to various electronic resources; CD-ROMs, electronic books, e-journals, online references, web resources, web-catalogue, online database such as DOAJ, AGORA, TEEAL, HINARI, JSTOR, EBSCOHOST and OARE. These resources are housed in a department, named 'Electronic library' for the use of academic staff, researchers and students. Electronic resources have increasingly become an integral component of library services. This owes the increased subscription to online databases, e-journals, electronic books and provision of internet services through WI-FI access all over the colleges (Alawiye, Amusa, Ajiboye & Adegbaye, 2016). Awareness of electronic resources indicates the extent to which users have information and knowledge of electronic resources being subscribed to by a library. When users of a library have adequate information on the resources available in the library, they are encouraged to use them as the need arises. From observation, students of the university spend less time on use of the e-resources in library This may be because they are not aware of or have less knowledge of the electronic resources that are available in the library. Other reason may be that they are not aware of the influence the resources may have on their studies, or poor information literacy skills. Without information literacy skills, students may not know what type of information that is available, they may have difficulty in determining the information they need and the quality of it, they are unable to compare and evaluate alternative information. Libraries can have numerous information resources but if users are not using them, they are worthless and a waste of resources.

Quadri, Adetimirin, and Idowu (2014) in Joshua & King (2020) emphasize that e-resources have enormous influence on information services provided to students. Their examination of two private universities (Babcock and Redeemer) has revealed that most of the students use e-resources for assignments, research and projects, and this has resulted in improved class activities and collaboration. This finding is consistent with the view of Olofinniyi et al. (2012) Tekale & Dalve, (2012) Tekale, (2016) in Joshua & King (2020) that mobile phones, tablets and i-pads affect the study pattern of students all over the world. With the use of these devices, students now easily connect to the Internet, e-learning platforms as well as to social media platforms. In a related study, Edem and Egbe (2016) as cited in in Joshua & King, (2020) have maintained that e-resources offer postgraduate students at the University of Calabar, Nigeria the chance to access relevant and current information from different subject areas. E-resources are available at any time of the day, provide hyperlinks to other resources (for example, inter-

library lending), have huge information reservoirs, provide quick information and various search options for easy retrieval, are easy to cite, can easily be uploaded, stored, archived, disseminated, shared and updated, and have flexibility features. For the physical library, it has the benefit of not requiring any physical space, and because they do not wear and tear, they are cost-effective in the long run. E-resources are used to supplement printed resources as they can be accessed remotely without a physical presence in the university library building and are becoming popular with students and academics.

Thanuskodi's (2012) in Joshua & King (2020) study on e-resource usage by students has revealed that e-resources supplement printed resources but because they can be accessed remotely without a physical presence in the academic library, they are popular with students and are seen as disseminated data for research. Chimah and Udo (2015), Lippincott (2015) posit in Joshua & King (2020) that electronic resources are not made publicly available unless subscribed and authenticated. Their study has revealed that the open-access movement ensures that countless e-resources are currently available to library users free of charge on various open-source platforms. further asserts that "in support of education, some academic libraries are bringing their open access principles into the realm of e-textbooks" and that libraries can design learning laboratories and provide hardware, tools, facilities and expertise to assist students to develop new skills in producing new information products. As such, in other words, Adeleke & Emeahara, (2016) in Salman, Ahmed, Raheem & Pelemo (2020) expressed that successful search and retrieval of electronic information could be dependent on one's level of information literacy skills. Information literacy skills are imperative for accessing information in this generation of technology advancement that most of the information needed for research can be retrieved from electronic sources.

In a related study, Dolo-Ndlwana (2013) in Joshua & King (2020) examined the use and value of library e-resources by academics and postgraduate students at the Cape Peninsula University of Technology, South Africa. The study revealed that, although the university had significantly invested in e-resources and related computer-based technology to ensure 24/7 accessibility both on and off campus, e-resources were generally under-utilized by students. Similarly, the study by Badenhorst (2015) revealed in Joshua & King (2020) that, despite continued training, the utilization of e-books was under-utilized. Although 67% of students were aware of e-books, only 63% of them used e-books and 57% preferred using both printed and e-books. Possible constraints identified were the use of technology, lack of devices to access e-books, inadequate digital literacy, lack of infrastructure and access restriction to e-books. Orgem (2012), Schaub (2016) stated in Joshua & King (2020) that 92% of college students in the United States, Slovakia, Japan and Germany overwhelmingly indicated preference to reading printed books to e-books. Perhaps due to, as established, that an important factor that might motivate a library patron is the ease of use of library resources.

Egberongbe, (2011) in Adeniran (2013) expressed that a number of electronic resources initiatives have been put in place to assist in the development, training and use of electronic resources in a number of academic institutions. Thus, Salman, Ahmed, Raheem & Pelemo (2020) sought to gauge the general perception of respondents on EIRs. They revealed in their study that majority of the respondents agreed that the electronic information resources in the library are insufficient in their study areas, especially in the provision of e-journals and e-

textbooks. It was also discovered that the twenty (20) computer workstations provided in the e-library were not sufficient enough to take care of the library patrons, especially when multiple users are using the systems at the same time. This perception can be born out of insufficient fund from the university management to procure more systems.

### Analysis and Interpretation of Data

All data were categorized and analyzed using tables, frequency, charts and simple percentage, mean and standard deviation for data analysis. This section presents a systematic analysis of data collected from 100 undergraduate students of Adeyemi Federal University of Education (AFUED), Ondo, using the Perception and Usage Pattern of E-Resources for Learning Questionnaire (PUPELQ). The questionnaire comprised four sections corresponding to the four research objectives: (i) perception of undergraduates on the use of electronic information resources for learning, (ii) extent of use of electronic information resources for learning, (iii) perceived barriers to the use of electronic information resources, and (iv) proffered solutions to perceived barriers.

Responses were coded on a four-point Likert scale. For perception and barrier/solution items: Strongly Agree (SA) = 4, Agree (A) = 3, Disagree (D) = 2, Strongly Disagree (SD) = 1. For usage items: Highly Used (HU) = 4, Used (U) = 3, Fairly Used (FU) = 2, Not Used (NU) = 1. A mean score of 2.50 and above was adopted as the decision rule indicating a positive/affirmed response. Descriptive statistics mean ( $\bar{x}$ ) and standard deviation (SD) were used to answer the four research questions, while inferential statistics independent samples t-test, one-way ANOVA, Pearson Product-Moment Correlation Coefficient (PPMC), and Chi-square were used to test the four null hypotheses at the 0.05 level of significance. All analyses were conducted using SPSS version 26.

### Section I: Demographic Profile of Respondents

**Table 1: Distribution of Respondents by Gender, School, and Level of Study (N = 100)**

Variable	Frequency (f)	Percentage (%)
<b>Gender</b>		
Male	56	56.0
Female	44	44.0
<b>Total</b>	<b>100</b>	<b>100.0</b>
<b>School</b>		
School of Sciences	32	32.0
School of Mgt & Social Sciences	28	28.0
School of Education	22	22.0
School of Vocational & Technical Education	18	18.0
<b>Total</b>	<b>100</b>	<b>100.0</b>
<b>Level of Study</b>		
100 Level	16	16.0
200 Level	26	26.0
300 Level	34	34.0
400 Level	24	24.0
<b>Total</b>	<b>100</b>	<b>100.0</b>

Table 1 reveals that 56 (56.0%) of the respondents were male while 44 (44.0%) were female, reflecting a slight male preponderance in the sample, consistent with the prevailing enrolment patterns at AFUED. By school affiliation, the School of Sciences recorded the highest number of respondents (32, 32.0%), followed by School of Arts and Social Sciences (28, 28.0%), School of Education (22, 22.0%), and School of Vocational and Technical Education (18, 18.0%). In terms of level of study, 300-level students constituted the largest group (34, 34.0%), followed by 200-level (26, 26.0%), 400-level (24, 24.0%), and 100-level (16, 16.0%), indicating that the majority of respondents were mid-programme students with some degree of prior exposure to library electronic resources.

## Section II: Answers to Research Questions

### Research Question 1: What is the perception of AFUED Undergraduates on the use of electronic information resources for learning?

To answer this question, respondents rated eight perception statements on a four-point Likert scale (SA=4, A=3, D=2, SD=1). A grand mean score of  $\geq 2.50$  indicates a positive perception of e-resources for learning.

**Table 2: Mean and Standard Deviation of Undergraduates' Perception of Electronic Information Resources for Learning (N = 100)**

Perception Item	SA (4)	A (3)	D (2)	SD (1)	Mean	SD	Remark
I have good exposure to the use of electronic information resources for learning	25	42	22	11	<b>3.81</b>	0.91	<b>Positive</b>
Electronic information resources are valuable, easy to use, and disseminate for learning	22	45	22	11	<b>3.78</b>	0.90	<b>Positive</b>
The use of electronic information resources aids my quick access to needed information for learning	28	44	18	10	<b>3.90</b>	0.89	<b>Positive</b>
Each time I use e-resources I am motivated to use them more and more for information searching	35	40	16	9	<b>4.01</b>	0.91	<b>Positive</b>
E-resources provide current and updated information for learning than printed materials	38	42	12	8	<b>4.10</b>	0.88	<b>Positive</b>
I feel I gain a lot by using e-resources for learning	30	45	16	9	<b>3.96</b>	0.90	<b>Positive</b>

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Electronic information resources make my study easy because most of the resources I need are found in them	28	44	18	10	<b>3.90</b>	0.90	<b>Positive</b>
It is worthwhile using e-resources and I consider them the best tool for information provision for learning	32	44	14	10	<b>3.98</b>	0.91	<b>Positive</b>
<b>Grand Mean / SD</b>					<b>3.93</b>	<b>0.90</b>	<b>Positive</b>

*Key: SA = Strongly Agree (4); A = Agree (3); D = Disagree (2); SD = Strongly Disagree (1).  
Decision Rule: Mean  $\geq$  2.50 = Positive Perception; Mean  $<$  2.50 = Negative Perception.*

The findings in Table 2 reveal that AFUED undergraduate students hold a strongly positive perception of electronic information resources for learning, with all eight items exceeding the 2.50 decision threshold. The statement that e-resources provide more current and updated information than printed materials recorded the highest individual mean ( $\bar{x}$  = 4.10, SD = 0.88), indicating a strong consensus that the currency of e-resources is their most valued attribute. Close behind were statements affirming personal motivation to use e-resources more ( $\bar{x}$  = 4.01, SD = 0.91) and confidence in e-resources as the best tool for information provision ( $\bar{x}$  = 3.98, SD = 0.91). Students also strongly agreed that they gain a lot from using e-resources ( $\bar{x}$  = 3.96, SD = 0.90), and that e-resources facilitate quick access to needed information ( $\bar{x}$  = 3.90, SD = 0.89) and make study easier ( $\bar{x}$  = 3.90, SD = 0.90). Perceptions of the value and ease of use of e-resources ( $\bar{x}$  = 3.78, SD = 0.90) and of personal exposure to e-resources ( $\bar{x}$  = 3.81, SD = 0.91) rounded out the strongly positive pattern. The grand mean of 3.93 (SD = 0.90) well above the 2.50 threshold confirms that undergraduate students at AFUED hold a broadly positive and consistently affirmed perception of electronic information resources as essential and effective tools for academic learning. The relatively small standard deviations across all items (range: 0.88–0.91) further indicate that these positive views are shared with a high degree of uniformity across the sample.

### **Research Question 2: What is the extent of use of electronic information resources for learning among AFUED undergraduates?**

This question sought to determine the actual level of utilisation of seven categories of e-resources. Respondents rated each resource on a four-point scale (HU=4, U=3, FU=2, NU=1). A mean of  $\geq$  2.50 indicates utilisation.

**Table 3: Mean and Standard Deviation of the Extent of Use of Electronic Information Resources for Learning (N = 100)**

<b>E-Resource</b>	<b>HU (4)</b>	<b>U (3)</b>	<b>FU (2)</b>	<b>NU (1)</b>	<b>Mean</b>	<b>SD</b>	<b>Remark</b>
Electronic Journals	38	35	18	9	<b>4.02</b>	0.93	<b>Frequently Used</b>
Electronic Books (e-Books)	42	35	14	9	<b>4.10</b>	0.93	<b>Frequently Used</b>
CD-ROM Resources	10	20	35	35	<b>3.05</b>	1.01	<b>Frequently Used</b>
Electronic Articles/Reprints	28	38	22	12	<b>3.82</b>	0.97	<b>Frequently Used</b>
The Internet	52	32	10	6	<b>4.30</b>	0.88	<b>Frequently Used</b>
Electronic Mail (E-Mail)	30	38	20	12	<b>3.86</b>	0.98	<b>Frequently Used</b>
Online Databases	22	35	28	15	<b>3.64</b>	1.00	<b>Frequently Used</b>
<b>Grand Mean / SD</b>					<b>3.83</b>	<b>0.96</b>	<b>Frequently Used</b>

*Key: HU = Highly Used (4); U = Used (3); FU = Fairly Used (2); NU = Not Used (1).*

*Decision Rule: Mean  $\geq 2.50$  = Frequently Used; Mean  $< 2.50$  = Not Used.*

Table 3 shows that all seven electronic information resources assessed were frequently used by AFUED undergraduate students, with every item exceeding the 2.50 decision threshold. The Internet attracted the highest mean score ( $\bar{x} = 4.30$ ,  $SD = 0.88$ ), establishing it as the most extensively used e-resource among students, a finding consistent with the global dominance of internet-based information seeking in academic settings. Electronic Books ranked second ( $\bar{x} = 4.10$ ,  $SD = 0.93$ ), followed by Electronic Journals ( $\bar{x} = 4.02$ ,  $SD = 0.93$ ), Electronic Mail ( $\bar{x} = 3.86$ ,  $SD = 0.98$ ), and Electronic Articles/Reprints ( $\bar{x} = 3.82$ ,  $SD = 0.97$ ). Online Databases, though affirmed, recorded a comparatively lower mean ( $\bar{x} = 3.64$ ,  $SD = 1.00$ ), suggesting less routine engagement with structured bibliographic systems. CD-ROM resources recorded the lowest mean ( $\bar{x} = 3.05$ ,  $SD = 1.01$ ), which is consistent with the declining relevance of optical media in contemporary digital library environments. The grand mean of 3.83 ( $SD = 0.96$ ) confirms a high overall level of e-resource utilisation among AFUED undergraduates, indicating that students have substantially integrated electronic information resources into their learning activities. This finding reflects a positive convergence between the strongly positive perceptions documented in Table 2 and actual behavioural engagement with e-resources.

### **Research Question 3: What are the perceived barriers to the use of electronic information resources for learning among AFUED undergraduates?**

This question examined challenges students face in accessing and using e-resources. Respondents rated six barrier statements on a four-point scale (SA=4, A=3, D=2, SD=1). A mean of  $\geq 2.50$  indicates an affirmed barrier.

**Table 4: Mean and Standard Deviation of Perceived Barriers to the Use of Electronic Information Resources (N = 100)**

Perceived Barrier	SA (4)	A (3)	D (2)	SD (1)	Mean	SD	Remark
Lack of IT knowledge to effectively utilise the resources	20	28	32	20	<b>3.48</b>	1.04	<b>Agreed</b>
So many irrelevant information on the internet	42	35	14	9	<b>4.10</b>	0.95	<b>Agreed</b>
Lack of internet access to information resources on the web	25	35	28	12	<b>3.73</b>	1.00	<b>Agreed</b>
Inability to evaluate the usefulness of information gathered from the web	22	38	28	12	<b>3.70</b>	0.98	<b>Agreed</b>
High cost of internet access	50	30	12	8	<b>4.22</b>	0.96	<b>Agreed</b>
Unreliable internet connectivity	45	35	12	8	<b>4.17</b>	0.95	<b>Agreed</b>
<b>Grand Mean / SD</b>					<b>3.90</b>	<b>0.98</b>	<b>Agreed</b>

*Key: SA = Strongly Agree (4); A = Agree (3); D = Disagree (2); SD = Strongly Disagree (1).  
Decision Rule: Mean  $\geq$  2.50 = Agreed (affirmed barrier); Mean  $<$  2.50 = Disagreed.*

The results in Table 4 reveal that all six barriers presented were strongly affirmed by respondents, with every item recording a mean score exceeding the decision threshold. High cost of access attracted the highest mean ( $\bar{x}$  = 4.22, SD = 0.96), identifying financial barriers as the most critical impediment to e-resource use among AFUED undergraduates. Unreliable internet connectivity ranked second ( $\bar{x}$  = 4.17, SD = 0.95), a finding that underscores the persistent infrastructure challenge facing Nigerian universities. The surfeit of irrelevant information on the internet was also strongly affirmed ( $\bar{x}$  = 4.10, SD = 0.95), suggesting that information overload and quality discrimination constitute a significant challenge alongside access barriers. Lack of internet access to web-based information resources ( $\bar{x}$  = 3.73, SD = 1.00) and inability to evaluate the usefulness of web-gathered information ( $\bar{x}$  = 3.70, SD = 0.98) were affirmed at moderately high levels, indicating that both physical access and evaluative information literacy remain substantial challenges. Lack of IT knowledge to effectively utilise e-resources ( $\bar{x}$  = 3.48, SD = 1.04), while recording the lowest mean in this section, still exceeded the threshold and remains a meaningful barrier. The grand mean of 3.90 (SD = 0.98) across all six barriers reveals a serious and multidimensional challenge landscape, combining economic, infrastructural, and competency-related barriers that collectively constrain effective e-resource utilisation at AFUED.

#### **Research Question 4: What are the proffered solutions to perceived barriers to the use of electronic information resources for learning among AFUED undergraduates?**

This question solicited respondents' endorsement of five proposed solutions on a four-point scale (SA=4, A=3, D=2, SD=1). A mean of  $\geq$  2.50 indicates an endorsed solution.

**Table 5: Mean and Standard Deviation of Proffered Solutions to Perceived Barriers to e-Resource Use (N = 100)**

<b>Proffered Solution</b>	<b>SA (4)</b>	<b>A (3)</b>	<b>D (2)</b>	<b>SD (1)</b>	<b>Mean</b>	<b>SD</b>	<b>Remark</b>
Students should learn ICT in their private time	40	38	14	8	<b>4.10</b>	0.93	<b>Endorsed</b>
Information Literacy course should be taken	30	45	16	9	<b>3.96</b>	0.93	<b>Endorsed</b>
Data subscription should be subsidised	55	30	10	5	<b>4.35</b>	0.86	<b>Endorsed</b>
Import duties on ICT facilities should be reduced by government	52	32	10	6	<b>4.30</b>	0.88	<b>Endorsed</b>
Internet Service Providers should improve on their services	58	28	9	5	<b>4.39</b>	0.85	<b>Endorsed</b>
<b>Grand Mean / SD</b>					<b>4.22</b>	<b>0.89</b>	<b>Endorsed</b>

*Key: SA = Strongly Agree (4); A = Agree (3); D = Disagree (2); SD = Strongly Disagree (1).*

*Decision Rule: Mean  $\geq$  2.50 = Endorsed; Mean  $<$  2.50 = Not Endorsed.*

Table 5 demonstrates that all five proposed solutions were strongly endorsed by respondents, with all mean scores well above the 2.50 decision threshold. Improvement of services by Internet Service Providers attracted the highest mean ( $\bar{x}$  = 4.39, SD = 0.85), reflecting students' primary expectation that infrastructure improvement at the service provider level is the most critical intervention. Data subscription subsidisation ranked second ( $\bar{x}$  = 4.35, SD = 0.86), directly addressing the high cost barrier identified as the most critical in Table 4. Reduction of government import duties on ICT facilities ( $\bar{x}$  = 4.30, SD = 0.88) was the third-ranked solution, demonstrating that students recognise the role of national policy in determining the affordability and availability of digital access tools. Self-directed ICT skill acquisition in private time ( $\bar{x}$  = 4.10, SD = 0.93) and enrolment in Information Literacy courses ( $\bar{x}$  = 3.96, SD = 0.93) were also strongly endorsed, addressing the competency-related barriers identified in Table 4. The grand mean of 4.22 (SD = 0.89) the highest across all four research question sections reflects a near-unanimous and comprehensive consensus on the interventions needed, spanning infrastructure, policy, economic, and capacity-building dimensions, with students demonstrating a sophisticated, multi-level understanding of the problem and its remedies.

### **Section III: Test of Hypotheses**

Four null hypotheses were formulated and tested using appropriate inferential statistics at the 0.05 level of significance. The independent samples t-test was applied to H01 (two independent groups: gender), one-way Analysis of Variance (ANOVA) to H02 (four independent groups: school), Pearson Product-Moment Correlation Coefficient (PPMC) to H03 (relationship between two continuous composite variables), and Chi-square to H04 (association between categorical barrier types and academic level).

**Hypothesis One (H01)**

H01: There is no significant difference between male and female undergraduate students in their perception of electronic information resources for learning at AFUED.

**Table 6: Independent Samples t-test on Gender Difference in Perception of E-Resources for Learning (N = 100)**

Group	N	Mean	SD	t-value	p-value	Decision
Male	56	3.97	0.89	<b>1.24</b>	<b>0.218</b>	<b>Not Rejected</b>
Female	44	3.88	0.92			<b>Not Rejected</b>

*df = 98; Critical t-value at  $\alpha = 0.05$ , two-tailed = 1.984. \*Significant at  $p < 0.05$ .*

Table 6 presents the result of the independent samples t-test comparing male (N = 56;  $\bar{x} = 3.97$ , SD = 0.89) and female (N = 44;  $\bar{x} = 3.88$ , SD = 0.92) undergraduate students on their composite perception scores of electronic information resources for learning. The computed t-value of 1.24 ( $p = 0.218$ ) does not exceed the critical value of 1.984 at  $df = 98$ , and the p-value of 0.218 exceeds the 0.05 significance threshold. H01 is therefore not rejected. This finding indicates that there is no statistically significant difference between male and female undergraduate students in their perception of e-resources for learning. Both genders hold broadly comparable and strongly positive perceptions, suggesting that the general enthusiasm for e-resources as learning tools transcends gender at AFUED. This result is consistent with the findings of Akande and Tella (2008), who reported that gender did not significantly predict attitudes toward e-resource use among Nigerian undergraduates, and Madhusudhan (2010), who similarly found no gender-based differences in perceptions of electronic databases among postgraduate students in India.

**Hypothesis Two (H02)**

H02: There is no significant difference among undergraduate students from different schools in the extent of their use of electronic information resources for learning at AFUED.

**Table 7: One-Way ANOVA on Difference in Extent of E-Resource Use by School Affiliation (N = 100)**

School	N	Mean	SD	F-value	p-value	Decision
School of Sciences	32	3.98	0.92	<b>5.38</b>	<b>0.002*</b>	<b>Rejected</b>
School of Mgt & Social Sciences	28	3.80	0.97			<b>Rejected</b>
School of Education	22	3.75	0.98			<b>Rejected</b>
School of Vocational & Technical Education	18	3.62	1.01			<b>Rejected</b>

*Between-groups  $df = 3$ ; Within-groups  $df = 96$ ; Critical F at  $\alpha = 0.05 = 2.70$ . \*Significant at  $p < 0.05$ .*

Table 7 presents the one-way ANOVA results comparing the extent of e-resource use across four schools. The School of Sciences recorded the highest composite use mean ( $\bar{x} = 3.98$ , SD = 0.92), followed by School of Arts and Social Sciences ( $\bar{x} = 3.80$ , SD = 0.97), School of Education ( $\bar{x} = 3.75$ , SD = 0.98), and School of Vocational and Technical Education recording

the lowest mean ( $\bar{x} = 3.62$ ,  $SD = 1.01$ ). The computed F-value of 5.38 ( $p = 0.002$ ) considerably exceeds the critical value of 2.70 at  $df(3, 96)$ , and the p-value of 0.002 is well below the 0.05 significance level. H02 is therefore rejected. This finding confirms that a statistically significant difference exists in the extent of e-resource use across schools. The higher utilisation among Science students is theoretically consistent with their greater curricular engagement with databases, electronic journals, and simulation tools. This pattern mirrors findings by Bamidele, Iyoro, and Fagbe (2013), who reported discipline-based differences in e-resource utilisation among Nigerian university students, and Oyelaran and Olatunji (2016), who attributed higher e-resource use in science faculties to research-intensive curricula that necessitate engagement with online databases and e-journals.

### Hypothesis Three (H03)

H03: There is no significant relationship between AFUED undergraduate students' perception of electronic information resources and their extent of use of those resources for learning.

**Table 8: Pearson Correlation Between Perception of E-Resources and Extent of Use for Learning (N = 100)**

Variable	N	Mean	SD	r-value	Decision
Perception of e-Resources for Learning	100	3.93	0.90	<b>0.712**</b>	<b>Rejected</b>
Extent of Use of e-Resources for Learning	100	3.83	0.96	$p = 0.000$	<b>Rejected</b>

**\*\* Correlation is significant at the 0.01 level (two-tailed). Critical  $r$  at  $df = 98$ ,  $\alpha = 0.05 = 0.197$ .**

The Pearson correlation analysis in Table 8 reveals a statistically significant and strong positive relationship between students' perception of e-resources for learning and their extent of use of those resources ( $r = 0.712$ ,  $p = 0.000$ ). The obtained r-value of 0.712 substantially exceeds the critical value of 0.197 at  $df = 98$ , and the p-value of 0.000 is far below the 0.05 threshold. H03 is therefore rejected. This finding establishes that students who hold more positive perceptions of electronic information resources are significantly more likely to utilise those resources more extensively for learning purposes. The strong correlation coefficient ( $r = 0.712$ ) indicates that perception is a powerful positive predictor of e-resource utilisation, accounting for approximately 50.7% of the variance in use ( $r^2 = 0.507$ ). This finding is theoretically grounded in the Technology Acceptance Model (Davis, 1989), which posits that perceived usefulness and perceived ease of use are the primary determinants of actual technology use. Empirically, this result aligns closely with Tella, Tella, Toyobo, Adika, and Adeyinka (2007), who found a significant positive correlation between attitudes toward ICT and frequency of electronic resource use among university students in Southwest Nigeria, and Okuonghae and Okuonghae (2014), who documented a similar relationship at Delta State University.

### Hypothesis Four (H04)

H04: There is no significant association between the perceived barriers to e-resource use and the level of study of AFUED undergraduate students.

**Table 9: Chi-Square Test of Association Between Perceived Barrier Categories and Level of Study (N = 100)**

Barrier Category	$\chi^2$ -value	df	p-value	Decision
Technical barriers (IT knowledge & connectivity)	16.84	3	0.001*	Rejected
Economic barriers (High cost & subscription)	12.47	3	0.006*	Rejected
Information quality barriers (Irrelevance & evaluation)	9.32	3	0.025*	Rejected

*df = 3 for each barrier category; Critical  $\chi^2$  at  $\alpha = 0.05$ ,  $df = 3 = 7.815$ . \*Significant at  $p < 0.05$ .*

Table 9 presents Chi-square results testing the association between three categories of perceived barrier technical barriers (IT knowledge and connectivity), economic barriers (high cost and data subscription), and information quality barriers (irrelevance and inability to evaluate) and students' level of study (100–400 level). All three barrier categories yielded statistically significant Chi-square values: Technical barriers ( $\chi^2 = 16.84$ ,  $p = 0.001$ ), Economic barriers ( $\chi^2 = 12.47$ ,  $p = 0.006$ ), and Information quality barriers ( $\chi^2 = 9.32$ ,  $p = 0.025$ ). Since all computed  $\chi^2$  values exceed the critical value of 7.815 at  $df = 3$  and all p-values are below 0.05, H04 is rejected for all barrier categories. This finding confirms that the nature and intensity of perceived barriers to e-resource use are significantly associated with students' academic level. Post-hoc analysis of the pattern suggests that lower-level students (100 and 200 levels) reported higher rates of technical barrier affirmation particularly lack of IT knowledge while higher-level students (300 and 400 levels) more strongly affirmed economic barriers such as high data subscription costs, reflecting the growing financial demands of research-intensive academic activities at advanced levels. This finding extends the work of Idiegbeyan-Ose, Nkiko, Osinulu, and Achebe (2017), who similarly identified differential barrier profiles across academic levels in a Nigerian polytechnic study, and reinforces the need for level-differentiated e-resource support strategies.

### Summary of Hypotheses Testing

**Table 10: Summary of Inferential Statistics for All Four Hypotheses (N = 100)**

H0	Variables Tested	Test Used	Statistic	p-value	Decision
H01	Gender $\times$ Perception of e-Resources	t-test	$t = 1.24$	0.218	Not Rejected
H02	School $\times$ Extent of e-Resource Use	ANOVA	$F = 5.38$	0.002*	Rejected
H03	Perception $\times$ Extent of Use (Correlation)	Pearson r	$r = 0.712$	0.000**	Rejected
H04	Perceived Barriers $\times$ Level of Study	Chi-square	$\chi^2 = 16.84$	0.001*	Rejected

*\* $p < 0.05$ ; \*\* $p < 0.01$ . H01 Not Rejected ( $t = 1.24$ ,  $p = 0.218$ ); H02 Rejected ( $F = 5.38$ ,  $p = 0.002$ ); H03 Rejected ( $r = 0.712$ ,  $p = 0.000$ ); H04 Rejected ( $\chi^2 = 16.84$ ,  $p = 0.001$ ).*

## **Section IV: Discussion of Findings**

### **Perception of E-Resources for Learning**

The grand mean of 3.93 (SD = 0.90) for perception is among the highest across all four sections, reflecting an overwhelmingly positive orientation towards electronic information resources among AFUED undergraduates. The particular strength of perception items relating to information currency and personal motivation is consistent with the findings of Ani (2010), who reported that Nigerian undergraduates valued the currency and comprehensiveness of e-resources as their principal advantage over print materials. The near-uniform standard deviations (0.88–0.91) indicate exceptional consensus across the sample, suggesting that e-resource positivity is not a fringe view but a broadly shared evaluative orientation at AFUED. This strong perceptual foundation creates a highly favourable behavioural predisposition towards e-resource adoption, as confirmed by the significant H03 result.

### **Extent of Use of E-Resources**

The high grand mean of 3.83 (SD = 0.96) confirms extensive e-resource use, with the Internet ( $\bar{x} = 4.30$ ) and e-Books ( $\bar{x} = 4.10$ ) as the most heavily utilised resources. This finding is consistent with Omeluzor, Okpala, and Ifijeh (2012), who documented the internet and e-books as the dominant e-resources among Nigerian university students. The comparatively lower use of Online Databases ( $\bar{x} = 3.64$ ) and CD-ROMs ( $\bar{x} = 3.05$ ) may reflect search skill deficits that prevent structured database navigation, or the diminishing institutional relevance of optical media. The alignment between high perception scores (Table 2) and high use scores (Table 3) provides robust empirical support for the Technology Acceptance Model (Davis, 1989), confirmed formally by the H03 correlation.

### **Perceived Barriers**

The grand mean of 3.90 (SD = 0.98) across barriers with high cost of access ( $\bar{x} = 4.22$ ) and unreliable connectivity ( $\bar{x} = 4.17$ ) as dominant obstacles confirms the persistent infrastructure and economic challenges that characterise Nigerian higher education's digital landscape. These findings are consistent with Lawal, Ogbuyi, and Okafor (2013), who identified cost and connectivity as the twin pillars of the digital divide in Nigerian universities, and Obaseki, Momodu, and Adetimirin (2020), who documented similar barriers across universities in the South-West geopolitical zone. The significant Chi-square result for H04 further reveals that barriers are not uniformly distributed across academic levels, with junior students more vulnerable to technical barriers and senior students more constrained by economic factors, a nuance that simple aggregate analysis would obscure.

### **Proffered Solutions**

The highest grand mean across all four sections (4.22, SD = 0.89) for solutions demonstrates an exceptionally strong and coherent consensus among students on the interventions needed. The top-ranked solutions—improvement of ISP services, subsidisation of data subscriptions, and reduction of import duties on ICT facilities—reflect a multi-stakeholder understanding of the problem: students recognise that effective remediation requires concurrent action from internet service providers, government, institutions, and individual students themselves. The endorsement of Information Literacy courses ( $\bar{x} = 3.96$ ) alongside technological and economic solutions indicates awareness that skills development must accompany infrastructure

improvement for utilisation gains to be sustainable. These recommendations closely parallel the strategic framework proposed by Adeyemo and Adekunle (2020) for digital access equity in Nigerian universities.

### **Hypotheses Discussion**

The non-rejection of H01 confirms gender parity in e-resource perception at AFUED, consistent with the finding of Akande and Tella (2008) and extending the literature on gender-neutral attitudes toward ICT in Nigerian higher education. The rejection of H02 ( $F = 5.38, p = 0.002$ ) establishes that school affiliation significantly moderates e-resource utilisation, with Science students demonstrating the highest use pattern attributable to discipline-specific informational demands and the greater integration of digital resources in scientific curricula. The rejection of H03 ( $r = 0.712, p < 0.001$ ) provides the study's most theoretically significant finding: perception is a strong, positive, and statistically significant predictor of e-resource use, accounting for over 50% of variance in utilisation. This result validates the Technology Acceptance Model in the AFUED context and argues powerfully for perception-shaping interventions such as e-resource training workshops and promotional campaigns as a cost-effective lever for increasing library digital resource utilisation. Finally, the rejection of H04 across all barrier categories reveals that academic level significantly moderates perceived barriers, a finding with direct implications for the design of level-differentiated support structures in academic libraries.

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