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INFLUENCE OF DIGITAL LITERACY SKILLS ON ELECTRONIC INFORMATION RESOURCES UTILIZATION AMONG UNDERGRADUATES IN UNIVERSITIES IN KADUNA STATE, NIGERIA

BY

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Abstract

Digital literacy skills are pivotal in today's world, to stay efficient and competitive in an information-driven environment. Low usage of electronic information resources is observed among undergraduates across the country for many reasons. However, this study examined the influence of digital literacy skills on electronic information resources use among undergraduates in universities in Kaduna state, Nigeria to contribute with ways to encourage the utilization of these resources. The study adopted a survey research design. The instrument for data collection was a self-constructed questionnaire. A total of 384 questionnaires were electronically administered, of which 361 were duly filled giving a response rate of 94%. The data collected were organized, coded and analyzed. The findings revealed that e-books, e-journals and e-databases were the electronic information resources majorly used by undergraduates. These resources were used every month to study, carry out assignments and performing research. The findings also discovered that the undergraduates possessed a high level of digital literacy skills, however, inadequate power supply, unstable internet connection and inability to comprehend electronic resources were the major challenges affecting the utilization of electronic information resources by undergraduates. The study hereby recommends the introduction of educational programs in higher institutions to enhance digital literacy skills and establishments of facilities to improve power supply and internet connection as this would improve utilization of electronic information resources.

Keywords: Digital literacy skills, electronic information resources, Undergraduates, Electronic information resources use, Kaduna State, Nigeria.

Introduction

In today's digital era, the widespread use of computer technology has made digital literacy skills and electronic information resources (EIRs) essential for academic and professional success. EIRs include e-books, e-journals, online databases, and multimedia materials that can be accessed through devices like computers, smartphones, and tablets (Lisedunetwork, 2023). The significance of EIRs lies in their ability to provide timely, up-to-date, and comprehensive access to a wide array of materials that enrich academic experiences. By enabling quick access to information, these resources improve time management and efficiency. Additionally, EIRs offer diverse content, exposing students to various perspectives and ideas while facilitating engagement with complex topics through multimedia tools (Sahabi et al., 2020). Furthermore, their usage aligns with environmental sustainability by reducing the reliance on printed materials (Lisedunetwork, 2023). Studies highlight the role of EIRs in academic tasks such as completing assignments and acquiring course-related materials. Despite the benefits, challenges such as poor internet connectivity, insufficient computer

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terminals, and limited ICT skills hinder students' access to EIRs (Mamaman et al., 2022).

Digital literacy skills, often synonymous with information literacy or computer literacy, are fundamental to effectively navigating and utilizing EIRs. These skills encompass the ability to find, evaluate, and communicate information using technology (Kaeophanuek et al., 2018). Ukwoma et al. (2016) observed that digital literacy significantly affects students' academic performance, while Choi and Kim (2020) emphasized its role in critically evaluating the quality and credibility of electronic information. Without digital literacy, students may struggle to utilize EIRs effectively, impeding their academic progress. Studies show that digital literacy skills are strong predictors of EIR usage. For example, Bukar et al. (2021) revealed a high level of information literacy among Nigerian undergraduates, which correlated with frequent EIR use. Conversely, Tagwai et al. (2023) found that low information literacy skills negatively impacted the use of EIRs at Kaduna State University.

In conclusion, digital literacy skills are crucial for undergraduates to maximize the potential of EIRs and enhance academic success while equipping the students for the challenges of a technology-driven world.

Statement of the Problem

Despite the widespread availability of electronic information resources (EIRs), there remains a significant problem of underutilization among undergraduates. Several studies have highlighted this issue, indicating low usage of these resources. For instance, Ayomide (2023) found that students at Umaru Musa Yar'adua University, Katsina, had a low level of EIR utilization. Similarly, Alhassan (2015) reported that students at two universities in Niger State, Nigeria, used only a few available electronic resources, while Osinulu (2020) discovered that students at Olabisi Onabanjo University's College of Health Sciences had access to EIRs, but their usage was minimal.

The challenges faced by undergraduates include difficulty in filtering and prioritizing large volumes of information, internet connectivity issues, lack of access to devices, and limited awareness of available resources. In addition, students may not have the digital literacy skills required to navigate complex electronic databases, assess the credibility of sources, or integrate information effectively. Digital literacy skills are essential for overcoming these barriers and improving the use of EIRs. These skills empower students to make informed decisions, critically evaluate digital content, and adapt to evolving technologies. Given the underutilization of EIRs, this study aims to investigate how digital literacy skills influence the effective use of electronic information resources among undergraduates in universities in Kaduna State, Nigeria.

Objective of the Study

i. Identify the types of electronic information resources used among undergraduates of Universities in Kaduna State, Nigeria.
ii. Ascertain the frequency of electronic information resources use among undergraduates of Universities in Kaduna State, Nigeria.
iii. Identify the extent of electronic information resources use among undergraduates of Universities in Kaduna State, Nigeria.
iv. Ascertain the level of digital literacy skills among undergraduates of Universities in Kaduna State, Nigeria.

ISSN: 1116-042X

v. Determine the influence of digital literacy skills on electronic information resources use among undergraduates in universities in Kaduna State, Nigeria.
vi. Identify challenges faced with using electronic information resources by undergraduates of Universities in Kaduna State, Nigeria.

Research Questions

i. What are the types of electronic information resources used among undergraduates of Universities in Kaduna State, Nigeria?
ii. What is the frequency of electronic information resources use among undergraduates of Universities in Kaduna State, Nigeria?
iii. What is the extent of electronic information resources use among undergraduates of Universities in Kaduna State, Nigeria?
iv. What is the level of digital literacy skills among undergraduates of Universities in Kaduna State, Nigeria?
v. What are some of the challenges undergraduates encounter with using electronic information resources in Universities in Kaduna State, Nigeria?

Hypothesis

Ho1- Digital literacy skills has no significant influence on electronic information resources use among undergraduates in universities in Kaduna State, Nigeria.

REVIEW OF LITERATURE

Concept of Electronic Information Resources

Electronic Information Resources (EIRs), also known as e-resources or digital resources, refer to data that can only be accessed through electronic devices, such as computers and smartphones, utilizing Information and Communication Technology (ICT). These resources range from e-books, e-journals, and databases to multimedia content such as images and videos (Padval, 2022; Kenchakkanavar, 2014). EIRs are distributed in various formats, including CD-ROMs and online platforms, and are invaluable for research and academic activities due to their ability to provide timely and up-to-date information (Efe & Sahabi, 2021; Uwandu, 2022). Examples of commonly used electronic resources include e-journals (e.g., JSTOR, ScienceDirect), e-books, and e-databases, which can be full-text or bibliographic (Kenchakkanavar, 2014). Additional EIRs encompass e-magazines, e-thesis, OPACs (Online Public Access Catalogs), and e-maps, providing a diverse range of materials for educational and research purposes (Padval, 2022). These resources are becoming increasingly important as digital formats gradually replace traditional print media, offering users faster, more comprehensive access to information (Owolabi et al., 2016).

The digital transformation in academic and research environments have led many institutions to adopt both print and digital collections, with a focus on electronic formats for acquisitions, especially for journals, magazines, and abstracting services. This shift to electronic resources facilitates the manipulation, retrieval, and dissemination of information, making them essential tools for modern knowledge management and enabling users worldwide to access vast amounts of information in real-time (Owolabi et al., 2016; Padval, 2022).

Overview of Electronic Information Resources Use by Undergraduates

Electronic Information Resources (EIRs) are crucial to enhancing the academic performance of undergraduates, providing easy and fast access to a wide array of scholarly materials. These resources have transformed how students access

ISSN: 1116-042X

information, expanding beyond geographical boundaries and limited library collections. Alegbeleye et al. (2019) emphasize that EIRs offer quick access to a vast amount of research material, enabling students to overcome barriers related to location and funding constraints. They have become a primary feature of academic libraries, serving the information needs of undergraduates efficiently.

Ukachi (2011) highlights the advantages of EIRs over print resources, particularly in terms of speed and convenience. Undergraduates can access information from anywhere and at any time, provided they have an internet connection, which removes the need for physical presence in libraries. This flexibility facilitates continuous learning and supports more efficient research processes. According to Khan (2016), the digital availability of thousands of resources, such as journals and monographs, has dramatically improved students' access to information, making it easier to obtain relevant literature and improving the overall effectiveness of academic activities. EIRs not only provide timely and up-to-date information but also offer advanced search features, which help undergraduates locate precise information quickly, saving time and effort (Kabara et al., 2020). This real-time access to the latest research and developments is invaluable in a constantly evolving academic landscape. Moreover, multimedia resources such as videos, animations, and interactive tools cater to various learning styles, making complex topics more engaging and understandable (Padval, 2022).

Challenges Undergraduates Face with Using Electronic Information Resources

There are factors that hinder the effective and efficient utilization of electronic information resources by undergraduates. The study conducted by Efe and Sahabi (2021) revealed that majority of the undergraduates were not even aware of electronic information resources, outlining lack of awareness as one of the challenges of utilizing these resources. Undergraduates cannot use resources they don't know are available to them, therefore undergraduates should first of all be enlightened on the existence of these resources through public announcements, awareness programs etc.

Undergraduates who are fully aware of electronic information resources still face challenges utilizing them. Alegbeleye et al. (2019) asserted lack of skills as a factor militating undergraduates' usage of electronic information resources. Undergraduates may be aware of electronic information resources but lack the essential skills required to utilize these resources. In-depth training should be organized for undergraduates in order to equip them with the skills necessary to navigate these resources, use search engines, evaluate these resources, discern credible sources from unreliable ones, recognize bias or misinformation etc. therefore enabling them to utilize the electronic information resources available to them. Adam (2017) also outlined lack of ICT skills as a discouraging factor for undergraduates' use of electronic information resources.

Owolabi et al. (2016) outlined structural challenges to the utilization of electronic information resources by undergraduates which include inadequate power supply, poor network/internet connectivity and limited access to computer terminals/inadequate provision of key electronic resources, devices and facilities. Again, some undergraduates may possess the necessary skills for electronic information resources usage but lack accessibility to these resources. Undergraduates might not have consistent

ISSN: 1116-042X

access to the internet or required subscriptions and devices, hindering their ability to utilize certain electronic information resources effectively. Also, technical glitches, slow internet connections, or platform compatibility issues can disrupt the smooth use of electronic information resources causing frustration and delays in research. The study carried out by Tofi and Fanafa (2019) similarly revealed inadequate computers in the library, poor internet connectivity, limited subscribed titles, power outages, difficulty to access and use, lack of relevant e-resources in various disciplines as well as no assistance from the library, as the problems encountered by undergraduates while accessing and using electronic information resources.

Concept of Digital Literacy Skills

In today's digital era, digital literacy skills are essential for individuals to engage in society, access information, and participate in online interactions. Hamutoglu et al. (2019) define digital literacy as the ability to comprehend and use information from various formats through information technologies and the internet. These skills are critical for teaching, learning, information production, and sharing. Similarly, Feola (2016) defines digital literacy as the capacity to use technological applications for personal and collective purposes.

Umar and Dangwaran (2023) emphasize that digital literacy encompasses navigating, evaluating, and utilizing information through digital technologies. It includes basic computer proficiency, critical thinking, information literacy, and online communication. Fraillon et al. (2014) underscore the importance of basic computer skills for effective digital navigation, which starts with knowledge of hardware, software, file management, and terminology. Kaeophanuek et al. (2018) expand on this by highlighting digital literacy as the ability to access, manage, and synthesize digital information, and create knowledge and media to communicate concepts across various contexts.

Overall, digital literacy involves using technology to access, evaluate, and present information while solving problems and exercising individual rights and responsibilities. These skills enable individuals to discern credible information, assess reliability, and avoid misinformation.

Voda et al. (2022) categorize digital literacy into six key skills: communication and collaboration, creativity, critical thinking, information management, problem-solving, and technical skills. Communication and collaboration involve using digital tools to connect and work with peers. Creativity entails generating digital content from personal ideas. Critical thinking involves reflective judgment of online information. Information skills focus on identifying and organizing digital data. Problem-solving addresses challenges in digital contexts, while technical skills equip individuals to navigate technological hurdles.

Overview of Digital Literacy Skills for Undergraduates

Digital literacy skills are essential for undergraduates, preparing them for academic success, future employment, and active engagement in the digital world. These skills enable students to navigate digital platforms used in educational institutions for accessing resources, submitting assignments, and communicating effectively (Umar & Dangwaran, 2023). They also promote critical thinking, allowing students to

ISSN: 1116-042X

assess the validity, relevance, and accuracy of information, which is vital for research and academic excellence. By leveraging digital tools, undergraduates enhance their academic performance and make informed, evidence-based decisions.

In the professional world, digital literacy is increasingly a requirement. Voda et al. (2022) emphasize that most public services and jobs, regardless of field, now require digital proficiency. Developing these skills during college not only boosts employability but also prepares students to adapt to the rapidly evolving job market. The ability to effectively use digital tools and technologies ensures that undergraduates are well-equipped for future employment. Digital literacy also plays a crucial role in online safety. Tomczyk and Eger (2020) highlight that these skills enable students to responsibly navigate online spaces, protect their privacy, and avoid risks like cyberbullying and identity theft. Additionally, digital literacy fosters lifelong learning, as Hargittai (2016) explains, empowering students to pursue self-directed learning and adapt to new technologies.

Digital Literacy Skills and Electronic Information Resources Use

Research consistently highlights the strong link between digital literacy skills and the effective use of electronic information resources (EIRs). Digital literacy includes ICT skills, computer literacy, and information literacy, all crucial for utilizing EIRs like online databases and e-resources. Adam (2017) found that while academics at Kaduna State University (KASU) were aware of and used online databases, their lack of information literacy and ICT skills limited their effective use. Efe and Sahabi (2021) found a similar issue among KASU undergraduates, who, despite some awareness, struggled with using these resources effectively due to skill gaps.

Uwandu (2022) reported that postgraduate students at Imo State University faced barriers such as poor internet connectivity and inadequate funding despite having access to e-books and online databases. Similarly, Ebiefung and Okafor (2022) found that undergraduates at Federal University, Otuoke, faced challenges like poor network connectivity and information overload despite frequent internet use.

Oseghale (2023) observed that while graduate students at the University of Ibadan had strong digital device skills, their ability to use e-resources was hindered by insufficient training and irregular internet access. This was supported by Azubuike (2016) and Adeniran and Onuoha (2018), who noted that postgraduate students with higher information literacy skills used EIRs more effectively but still faced issues like power outages and inconsistent access. Ekong and Ekong (2018) emphasized that strong information literacy and computer skills improve academic performance by enhancing the use of e-library resources. Bukar et al. (2021) confirmed that information literacy is a significant predictor of EIR use among undergraduates in Nigeria. Global studies, including Ehioghae et al. (2020) and Apotiade (2017), also stress that digital literacy is crucial for accessing academic resources, though challenges such as inadequate infrastructure and lack of ICT training persist.

Theoretical Framework

The Big6 Skills Model

One of the most influential models guiding the development of these skills is the Big6 Skills model, developed by Michael B. Eisenberg and Robert E. Berkowitz in 1990. The Big6 model consists of six

ISSN: 1116-042X

stages that help individuals identify their information needs and efficiently navigate the information landscape. Unlike other problem-solving models that may promote a rigid, one-size-fits-all strategy, the Big6 offers a flexible and comprehensive set of information and technology skills, enabling students to adapt these skills across various tasks and disciplines.

The first stage, *Task Definition*, focuses on defining the information problem, understanding the specific information needs, and establishing the goals for the task. This stage encourages users to clarify what information they seek and why it is needed. The second stage, *Information Seeking Strategies*, involves identifying potential sources that align with the defined task. Individuals select appropriate search tools, databases, and other resources to ensure a focused and effective search process.

The third stage, *Location and Access*, is concerned with retrieving information from the selected sources. Whether through libraries, online databases, or other digital tools, individuals are guided in accessing the most relevant resources. Upon gathering information, users move to the fourth stage, *Use of Information*, where they evaluate the relevance, accuracy, and reliability of the data. This phase encourages critical analysis of the information to ensure its applicability to the task at hand. In the fifth stage, *Synthesis*, users organize and combine information from different sources, engaging in critical thinking to construct a coherent and structured response to the original task. This step emphasizes the integration of diverse information into a unified, meaningful context. Finally, the sixth stage, *Evaluation*, prompts users to reflect on the entire information-seeking process. This involves assessing the quality and effectiveness of the gathered information, identifying successes and challenges, and determining areas for future improvement.

The Big6 Skills model is widely utilized in educational settings to promote information literacy. Its structured and adaptable nature not only equips individuals with the necessary skills for effective information retrieval and use but also fosters critical thinking, enabling them to navigate the increasingly complex digital landscape with confidence. By providing a clear framework for teachers and students, the Big6 enhances both instructional strategies and learning outcomes.

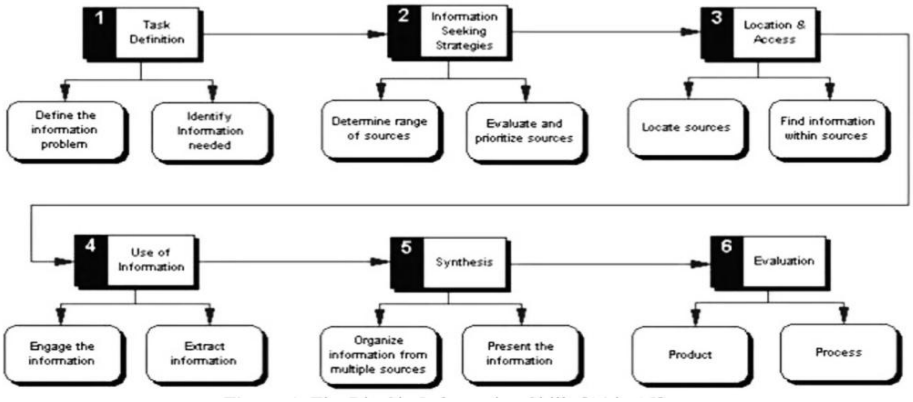

Figure 2.1 The Big Six Information Skills Model

Source: Eisenberg & Berkowitz (1990)

Journal of Library, Archival & Information Science Vol. 1, No. 1, October 2024
Department of Library and Information Science, Faculty of Social Sciences, Plateau State University, Bokkos, Nigeria
ISSN: 1116-042X

Unified Theory of Acceptance and Use of Technology (UTAUT)

The Unified Theory of Acceptance and Use of Technology (UTAUT), developed by Venkatesh et al. in 2003, offers a comprehensive framework to understand the factors influencing individuals' adoption and use of technology. UTAUT integrates multiple models to provide a cohesive view of technology acceptance and its determinants. The theory identifies four key constructs:

1. **Performance Expectancy (PE)** – the perceived usefulness of the technology in improving performance.
2. **Effort Expectancy (EE)** – the perceived ease of use of the technology.
3. **Social Influence (SI)** – the impact of social relationships and networks on an individual's technology adoption.
4. **Facilitating Conditions (FC)** – the availability of resources and support systems necessary for effective use of the technology.

Additionally, UTAUT includes moderators such as gender, age, experience, and voluntariness that can affect the relationship between these constructs and technology adoption.

UTAUT's strength lies in its versatility, enabling researchers to predict and analyze user behavior in diverse technological settings. It has evolved into UTAUT2, which includes additional factors such as hedonic motivation, price value, and habit, offering a more nuanced understanding of user acceptance. This adaptability makes UTAUT a valuable tool for studying technology adoption across different domains and guiding the design of user-friendly systems.

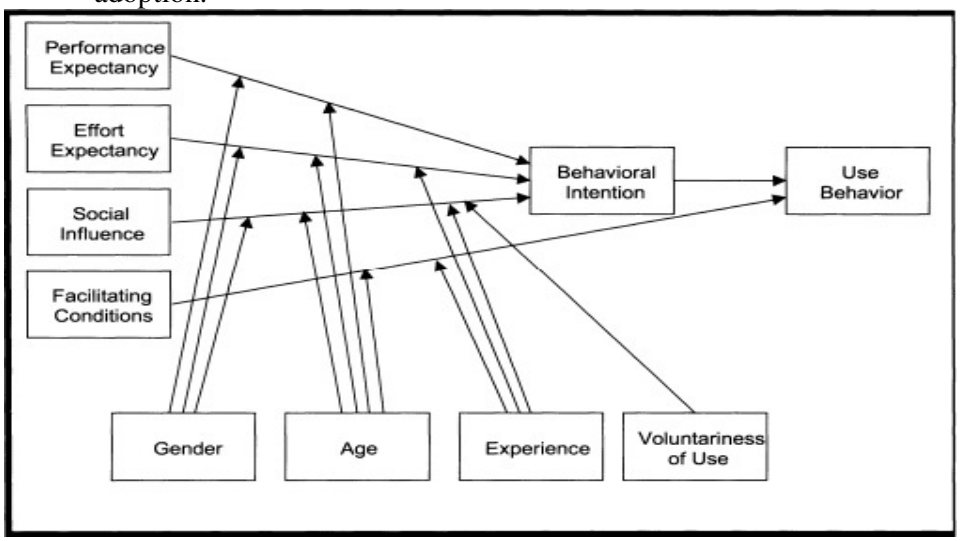

Figure 2.2 The Unified Theory of Acceptance and Use of Technology (UTAUT)

Source: Venkatesh et al. (2003)

ISSN: 1116-042X

METHODOLOGY

Research Design

The chosen research design for this study is the survey design. The survey design is considered appropriate as it allows for the description of current conditions, exploration of relationships between identified variables, and the acquisition of answers to research questions and hypotheses through the collection of primary data using questionnaires. The survey design also gives respondents the chance to express their opinions on the investigated variables. Therefore, this research paper adopts a survey study design to investigate the influence of digital literacy skills on electronic information resources use by undergraduates in universities in Kaduna State, Nigeria.

Sample Size and Sampling Technique

A sample is a subset of a population. A sample size of 384 undergraduates at 0.0025 margin of error at 95.0% confidence level from a study population of 124,000 undergraduates was determined using the Krejcie and Morgan's (1970) table. Stratified random sampling technique was employed in selecting the 384 undergraduate students (sample size) needed for the study. With Kaduna State University (KASU) taking 56% of the population, Ahmadu Bello University (ABU) taking 40% and Air Force Institute of Technology (AFIT) taking 4%, these percentages will be applied to the number of students to be selected from each university from the sample size.

Table 3.2 distribution of sample size

S/N	UNIVERSITIES	% OF SAMPLE SIZE	NUMBER OF STUDENTS
1	Kaduna State University (KASU)	56%	215
2	Air Force Institute of Technology (AFIT)	4%	15
3	Ahmadu Bello University (ABU)	40%	154
	TOTAL	100%	384

Source: Field Survey, 2023

Journal of Library, Archival & Information Science Vol. 1, No. 1, October 2024
Department of Library and Information Science, Faculty of Social Sciences, Plateau State University, Bokkos, Nigeria
ISSN: 1116-042X

DATA ANALYSIS, RESULTS AND DISCUSSION OF FINDINGS

4.1 Demographic Information of Respondents

Table 4.1 Demographic features of respondents

Variable		Frequency (n)	Percentage (%)
Name of Institution	KASU	200	55.4
	ABU	145	40.2
	AFIT	16	4.4
	Total	**361**	**100.0**
Level	400	121	33.5
	200	97	26.9
	300	82	22.7
	100	42	11.6
	500 and above	19	5.3
	Total	**361**	**100.0**
Sex	Male	198	54.8
	Female	163	45.2
	Total	**361**	**100.0**
Age	20 – 24	196	54.3
	15 – 19	140	38.8
	25 – 29	24	6.6
	30 and above	1	0.3
	Total	**361**	**100.0**

Source: Field Survey, 2024.

KEY: ABU= Ahmadu Bello University, AFIT= Air Force Institute of Technology, KASU= Kaduna State University

The demographic information in Table 4.1 reveals that majority of the respondents were from Kaduna State University (KASU) with 55.4%, followed by Ahmadu Bello University (ABU) with 40.2% and then Air Force Institute of Technology (AFIT) with 4.4%. Out of these, majority were in 400 level (33.5%), most of them were males (54.8%) and they were majorly young adults between the ages of 20 – 24 (54.3%). This shows that majority of the respondents were males who were young adults in 400 level from Kaduna State University (KASU).

Analysis and Presentation of Research Questions

Research Question One: What are the types of electronic information resources used among undergraduates?

ɔurnal of Library, Archival & Information Science Vol. 1, No. 1, October 2024
Department of Library and Information Science, Faculty of Social Sciences, Plateau State University, Bokkos, Nigeria
ISSN: 1116-042X

Table 4.2 Types of Electronic Information Resources Used

Types of Electronic Information Resources I make use of the following electronic information resources:	SA Freq. (%)	A Freq. (%)	D Freq. (%)	SD Freq. (%)	Mean $\bar{x}$	Standard Deviation (SD)
E-books	176 (48.8)	163 (45.2)	3 (0.8)	19 (5.3)	3.37	0.75
E-databases	117 (32.4)	182 (50.4)	60 (16.6)	2 (0.6)	3.15	0.70
E-journals	83 (23.0)	175 (48.5)	94 (26.0)	9 (2.5)	2.92	0.77
E-theses	19 (5.3)	137 (38.0)	143 (39.6)	62 (17.2)	2.31	0.82
OPAC (Online Public Access Catalog)	34 (9.4)	89 (24.7)	186 (51.5)	52 (14.4)	2.29	0.83
CD-ROMs (Compact Disk Read-Only Memory)	18 (5.0)	145 (40.2)	106 (29.4)	92 (25.5)	2.25	0.89
Average Overall Mean					**2.72**	**0.79**

The result in Table 4.2 reveals that respondents agreed to the use of electronic information resources ($\bar{x}$ =2.72). Specifically, respondents strongly agreed to the use of e-books ($\bar{x}$ =3.37); agreed to the use of e-databases ($\bar{x}$ =3.15) and e-journals ($\bar{x}$ =2.92); and disagreed to the use of e-theses ($\bar{x}$ =2.31), OPAC ($\bar{x}$ =2.29) and CD-ROMs ($\bar{x}$ =2.25). This implies that undergraduates in Kaduna State made use of electronic information resources with e-books, e-databases and e-journals being the major e-resources used.

Research Question Two: What is the frequency of electronic information resources use among undergraduates?

ISSN: 1116-042X

Table 4.3: Frequency of electronic information resources use

Frequency of electronic information resources use.	D Freq. (%)	W Freq. (%)	M Freq. (%)	O Freq. (%)	N Freq. (%)	Mean $\bar{x}$	Standard Deviation (SD)
E-books	143 (39.6)	100 (27.7)	51 (14.1)	64 (17.7)	3 (0.8)	3.88	1.14
E-journals	65 (18.0)	125 (34.6)	78 (21.6)	55 (15.2)	38 (10.5)	3.34	1.24
E-databases	26 (7.2)	145 (40.2)	76 (21.1)	106 (29.4)	8 (2.2)	3.21	1.02
E-theses	20 (5.5)	72 (19.9)	60 (16.6)	152 (42.1)	57 (15.8)	2.57	1.14
OPAC (Online Public Access Catalog)	7 (1.9)	63 (17.5)	82 (22.7)	119 (33.0)	90 (24.9)	2.39	1.10
CD-ROMs (Compact Disk Read-Only Memory)	8 (2.2)	56 (15.5)	66 (18.3)	138 (38.2)	93 (25.8)	2.30	1.08

Source: Field Survey, 2024. Freq = Frequency

KEY: D=Daily, W=Weekly, M=Monthly, O=Occasionally, N=Never * Decision rule: if mean is 1 to 1.79=Never, 1.80 to 2.59 =occasionally, 2.60 to 3.39 =Monthly, 3.40 to 4.19= Weekly, 4.20 to 5=Daily.**

The result in Table 4.3 shows that in general respondents used electronic information resources on a monthly basis ($\bar{x}$ =2.95). E-books ($\bar{x}$ =3.88) are used weekly which makes them the most frequently used; e-journals ($\bar{x}$ =3.34) and e-databases ($\bar{x}$ =3.21) are used monthly; while e-theses ($\bar{x}$ =2.57), OPAC ($\bar{x}$ =2.39) and CD-ROMs ($\bar{x}$ =2.30) are used occasionally. This suggests that electronic information resources were used on a monthly basis by the undergraduates in Kaduna State.

Research Question Three: What is the extent of electronic information resources use among undergraduates?

Journal of Library, Archival & Information Science Vol. 1, No. 1, October 2024
Department of Library and Information Science, Faculty of Social Sciences, Plateau State University, Bokkos, Nigeria
ISSN: 1116-042X

Table 4.4: Extent of electronic information resources use

Extent of electronic information resources use The extent to which I use:	VHE Freq. (%)	HE Freq. (%)	LE Freq. (%)	NE Freq. (%)	Mean $\bar{x}$	Standard Deviation (SD)
E-books for studying	231 (64.0)	91 (25.2)	38 (10.5)	1 (0.3)	3.53	0.69
E-databases for research	109 (30.2)	189 (52.4)	59 (16.3)	4 (1.1)	3.12	0.71
E-journals for assignments	121 (33.5)	142 (39.3)	77 (21.3)	21 (5.8)	3.01	0.89
E-theses for project writing	58 (16.1)	121 (33.5)	110 (30.5)	72 (19.9)	2.46	0.99
OPAC (Online Public Access Catalog) for project writing	27 (7.5)	145 (40.2)	107 (29.6)	82 (22.7)	2.32	0.91

Source: Field Survey, 2024. Freq = Frequency

KEY: VHE=Very High Extent, HE=High Extent, LE=Low Extent, NE=No Extent * Decision rule: if mean is 1 to 1.74=No s Extent, 1.75 to 2.49 = Low Extent, 2.50 to 3.24 =High Extent, 3.25 to 4= Very High Extent.**

The result in Table 4.4 highlights that respondents used electronic information resources to a high extent ($\bar{x}$ =2.76). The extent to which e-books were used for studying was very high ($\bar{x}$ =3.53); the extent to which e-databases were used for research was high ($\bar{x}$ =3.12); the extent to which e-journals were used for assignments was high ($\bar{x}$ =3.01); the extent to which e-theses were used for project writing was low ($\bar{x}$ =2.46); the extent to which OPAC was used for project writing was low ($\bar{x}$ =2.32); and finally, the extent to which CD-ROMs were used for studying and writing term papers was low ($\bar{x}$ =2.10). This implies that undergraduates in Kaduna State made use of electronic information resources for the purpose of studying, carrying out assignments and performing research.

Research Question Four: What is the level of digital literacy skills among undergraduates?

Journal of Library, Archival & Information Science Vol. 1, No. 1, October 2024
Department of Library and Information Science, Faculty of Social Sciences, Plateau State University, Bokkos, Nigeria
ISSN: 1116-042X

Table 4.5: Digital literacy skills of undergraduates

Digital Literacy Skills	VH Freq. (%)	H Freq. (%)	L Freq. (%)	VL Freq. (%)	Mean $\bar{x}$	Standard Deviation (SD)
Task Definition (Mean = 3.40, SD = 0.53)						
My ability to identify my information need is…	203 (56.2)	157 (43.5)	1 0.3)	0 (0.0)	3.56	0.50
My ability to determine my information search topic is…	145 (40.2)	215 (59.6)	1 (0.3)	0 (0.0)	3.40	0.50
My ability to come up with the type of information needed for solving a problem is...	116 (32.1)	214 (59.3)	31 (8.6)	0 (0.0)	3.24	0.59
Synthesis of information (Mean = 3.23, SD = 0.58)						
My ability to organize and communicate information to others is…	113 (31.3)	241 (66.8)	6 (1.7)	1 (0.3)	3.29	0.51
My ability to build upon newly gathered information and combine with previous information is…	124 (34.3)	211 (58.4)	26 (7.2)	0 (0.0)	3.27	0.59
My ability to create a multimedia presentation from information gathered is…	99 (27.4)	209 (57.9)	53 (14.7)	0 (0.0)	3.13	0.64
Evaluation of Information (Mean = 3.21, SD = 0.57)						
My ability to assess the information gathered to see if it meets my information need is…	113 (31.1)	225 (62.3)	22 (6.1)	1 (0.3)	3.25	0.57
My ability to explain the processes employed while obtaining information is…	98 (27.1)	233 (64.5)	29 (8.0)	1 (0.3)	3.19	0.57
My ability to explain the difficulties experienced while obtaining information is…	96 (26.6)	237 (65.7)	26 (7.2)	2 (0.6)	3.18	0.57
Information Seeking Strategies (Mean = 3.16, SD -= 0.64)						
My ability to find the information I need is…	128 (35.5)	174 (48.2)	59 (16.3)	0 (0.0)	3.19	0.70
My ability to select the best sources of information is…	89 (24.7)	248 (68.7)	24 (6.6)	0 (0.0)	3.18	0.53
My ability to use keywords to search for the information I need is…	104 (28.8)	188 (52.1)	69 (19.1)	0 (0.0)	3.10	0.69

ISSN: 1116-042X

Location and Access of Information (Mean = 3.12, SD = 0.60)						
My ability to select the appropriate information search tools to access the information I need is…	98 (27.1)	226 (62.6)	37 (10.2)	0 (0.0)	3.17	0.59
My ability to filter search results by date, subject, language etc. is…	74 (20.5)	248 (68.7)	39 (10.8)	0 (0.0)	3.10	0.55
My ability to identify the information most relevant to my needs from various sources is…	99 (27.4)	200 (55.4)	62 (17.2)	0 (0.0)	3.10	0.66
Use of Information (Mean = 3.02, SD = 0.62)						
My ability to use information to meet my needs by comprehending information in whatever format (i.e. charts, audio, diagrams etc.) is…	95 (26.3)	242 (67.0)	24 (6.6)	0 (0.0)	3.20	0.54
My ability to compare different sources of information to determine correctness and reliability of the information is…	93 (25.8)	234 (64.8)	34 (9.4)	0 (0.0)	3.16	0.57
My ability to make use of Boolean search techniques (i.e. the use of AND, OR, NOT) to get the information I need is…	59 (16.3)	138 (38.2)	159 (44.0)	5 (1.4)	2.70	0.75
Average Overall Mean					3.19	0.59

Source: Field Survey, 2024. Freq = Frequency

KEY: VH=Very High, H=High, L=Low, VL=Very Low * Decision rule: if mean is 1 to 1.74=Very Low, 1.75 to 2.49 =Low, 2.50 to 3.24 =High, 3.25 to 4=Very High.**

The result in Table 4.5 shows that in general, respondents had a high level of digital literacy skills ($\bar{x}$ =3.19). Specifically, respondents possessed a very high level of digital literacy skills in terms of task definition ($\bar{x}$ =3.40); and a high level of digital literacy skills in terms of information-seeking strategies ($\bar{x}$ =3.16), location and access of information ($\bar{x}$ =3.12), use of information ($\bar{x}$ =3.02), synthesis of information ($\bar{x}$ =3.23) and evaluation of information ($\bar{x}$ =3.21). Therefore, this implies that undergraduates in Kaduna State possessed a high level of digital literacy skills.

Research Question Five: What are the challenges undergraduates encounter with using electronic information resources?

ISSN: 1116-042X

Table 4.6: Challenges undergraduates encounter with using electronic information resources

Challenges	Yes Freq. (%)	No Freq. (%)
There is no enough power supply for me to use electronic information resources	160 (44.3)	201 (55.7)
I find electronic information resources complex and confusing	151 (41.8)	210 (58.2)
There is no good/stable internet connection for me to use electronic information resources	148 (41.0)	213 (59.0)
I don't have the password to access electronic information resources in my school's library	140 (38.8)	221 (61.2)
I don't know how to use electronic information resources	47 (13.0)	314 (87.0)
I am not aware of electronic information resources	32 (8.9)	329 (91.1)
I don't have access to computers/ electronics devices to access electronic information resources	24 (6.6)	337 (93.4)

Source: Field Survey, 2024. Freq = Frequency

The result in Table 4.6 shows that inadequate power supply to use electronic information resources (44.3%) was the major challenge faced by respondents, this was followed by finding electronic information resources complex and confusing (41.8%) and then unstable internet connection to access and use electronic information resources (41%). Other challenges include not having the password to access electronic information resources in the school's library (38.8%), lack of skills to use electronic information resources (13%), lack of awareness of electronic information resources (8.9%) and no access to computers or electronic devices to access electronic information resources (6.6%).

This analysis shows that majority of undergraduates in Kaduna State had no challenge with utilizing electronic information resources, but the few who did were challenged majorly with inadequate power supply, unstable internet connection and inability to comprehend electronic information resources.

ISSN: 1116-042X

Analysis and Presentation of Research Hypothesis

Decision Rule

H01: Digital literacy skills have no significant influence on electronic information resources use among undergraduates in universities in Kaduna State, Nigeria.

Table 4.7 Influence of digital literacy skills on electronic information resources use

Variables	B	Std. Error	Beta (*β*)	t	p	Adj.R^2	F	*df*(residual)	p
(Constant)	1.487	4.814		.309	.758	0.318	28.932	6(354)	0.001
Task Definition	5.457	.599	.588	9.114	.001				
Information Seeking Strategies	-3.011	.435	-.443	-6.921	.001				
Location and Access of Information	-.833	.530	-.098	-1.571	.117				
Use of Information	.874	.404	.117	2.163	.031				
Synthesis of Information	.297	.491	.038	.606	.545				
Evaluation of Information	1.968	.425	.266	4.635	.001				

Source: Field Survey, 2024. ***Note: β= Standardized Coefficient, significant at 0.05***

Table 4.7 reveals that digital literacy skills significantly influence use of electronic information resources among undergraduates in Kaduna State *(Adj.R^2 = 0.318, F(6, 354) = 28.932, p < 0.05)*. This suggests that the linear combination of digital literacy skills would improve use of electronic information resources. In addition, the linear combination of digital literacy skills could explain 31.8% *(Adj.R^2 = 0.318)* variation in use of electronic information resources. Consequently, the null hypothesis was rejected.

From the individual perspective, task definition *(β = 0.588, t (354) = 9.114, p< 0.05)* and evaluation of information *(β = 0.266, t (354) = 4.635, p < 0.05)* had a positive significant influence on use of electronic information resources; information seeking strategies *(β = -0.443, t (354) = -6.921, p< 0.05)* had a negative significant influence on use of electronic information resources; while location and access of information *(β =0.098, t (354) = -1.571, p> 0.05)*, use of information *(β = 0.117, t (354) = 2.163, p> 0.05)* and synthesis of information *(β = 0.038, t (354) = 0.606, p> 0.05)* had no significant influence on use of electronic information resources. This implies that increase in task definition and information evaluation skills will enhance the use of electronic information resources among undergraduates in Kaduna State.

ISSN: 1116-042X

Discussion of Findings

This section gives detailed discussions on the various findings discovered from the research questions relevant to this study. This study was carried out to investigate the influence of digital literacy skills on the use of electronic information resources among undergraduates in Kaduna State and it was found that electronic information resources were used by the undergraduates. It was also found that e-books, e-journals and e-databases were the main resources utilized by the undergraduates. This finding supports the position of Alhassan (2015) who revealed online databases and electronic databases among the electronic resources often used by undergraduate students, and also that of Ayomide (2023) who identified e-journals as part of the electronic resources accessed and used by undergraduate students also. Electronic information resources were used on a monthly basis by the undergraduates however, it was revealed that e-books were used on a weekly basis, e-journals and e-databases on a monthly basis, while e-theses, OPAC and CD-ROMs were used occasionally.

In the same vein, Gakibayo et al. (2013) study revealed that students in the university made use of electronic information resources once in a month, supporting this study. The extent to which undergraduates use electronic information resources was also analyzed in this study. The findings discovered that undergraduates generally used these resources to a high extent, this included the use of e-books for studying, e-journals for assignments and e-databases for research. This shows that electronic information resources were majorly used by undergraduates for the purpose of studying, carrying out assignments and performing research. This finding therefore supports the study of Bankole et al. (2015) which highlighted completing class assignments, obtaining course related materials (studying) and keeping abreast of latest development in course field (research) as the major purposes for which students used electronic resources.

This study also examined the digital literacy skills of the undergraduates. It was discovered that the undergraduates possessed a high level of digital literacy skills in terms of task definition, information seeking strategies, location and access of information, use of information, synthesis of information and evaluation of information. In the same vein, Fakunle et al. (2022) study revealed that most undergraduates could use technology competently to interpret and understand information in digital contents. This finding also supports the position of Umar and Dangwaran (2023) study which stated that the level of digital literacy of undergraduates is high.

Undergraduates were faced with some difficulties when accessing and utilizing electronic information resources and the major challenge revealed by this study was inadequate power supply to access and use these resources. This was followed by inability to comprehend electronic information resources, and then unstable internet connection to access and use the e-resources. Buba & Lawan (2023) study is supported by this finding which highlighted erratic power supply and inability to seek, obtain and evaluate information as the prominent factors hindering the utilization of electronic resources by undergraduates. Mamman and Abubakar (2022) study also discovered poor internet connectivity, insufficient computer terminals and inadequacy of Information and Communication Technology (ICT) skills

ISSN: 1116-042X

as some of the major factors working against the smooth access and use of electronic information resources in the institutions studied.

It was also ascertained by this study that digital literacy skills significantly influenced the use of electronic information resources among undergraduates in Kaduna State. This supports Bukar et al. (2021) study which stated that information literacy skills are major predictors of use of electronic information resources by undergraduate students in the selected federal university libraries. As pointed out by the findings of this study, digital literacy skills have a 31.8% chance of influencing the use of electronic information resources, hence improvement of the quality of undergraduates' digital literacy skills should be considered as this would support the degree to which electronic information resources are used.

5.2 Recommendations

The following recommendations are made based on the findings of this study:

1. Higher institution administrators in Kaduna State should introduce programs to increase their students' level of awareness of electronic information resources and educate them on the value and benefits these resources can offer them.
2. Training programs on how to efficiently and effectively use electronic information resources should be employed for undergraduates in Kaduna State in order enhance their digital literacy skills in all aspects and improve comprehension and utilization of these resources.
3. Higher institution administrators in Kaduna State should also give more attention to infrastructural growth in order to provide steady power supply and good internet connections, for this will solve the major challenge of inadequate power supply and unstable internet connection faced by undergraduates with using electronic information resources.

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