



Indonesian Journal of Educational Research and Technology

Journal homepage: <http://ejournal.upi.edu/index.php/IJERT/>



Utilization of E-Resources for Learning Among Undergraduates

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ABSTRACT

This study determined the utilization of e-resources for learning among undergraduates. The study adopted descriptive research of the survey type. The population for this study consists of all National Open University of Nigeria (NOUN) undergraduates. Proportional sampling techniques were used to allocate many respondents in each NOUN centre based on their estimated population using Israel Model. The instrument for data collection was an adapted questionnaire. Descriptive and Inferential statistics were used to answer the research question and test the stated hypotheses with the aid of statistical product and service solution (SPSS) version 20.0 at a 0.05 level of significance. The findings indicated that undergraduate students had positive utilization of E-resources for learning. No significant difference exists in the undergraduate students' utilization of E-resources for learning based on gender and digital age. The study concluded that learning can be enhanced among undergraduate students if appropriate resources are deployed for learning. Therefore, it was recommended that undergraduate students be encouraged to deploy e-resources for learning irrespective of their gender.

ARTICLE INFO

Article History:

Submitted/Received 13 Feb 2022

First revised 02 Mar 2022

Accepted 14 Mar 2022

First available online 15 Mar 2022

Publication date 01 Mar 2023

Keyword:

*Area of Specialization,
Digital Age,
E-Resources,
Gender.*

1. INTRODUCTION

The developmental strive of information and communication technology (ICT) in most countries is very significant in all sectors including education. With the use of ICT, easy access to learning has been greatly achieved and knowledge does not only lie on the teacher but rather serves as the chief guild of their students. The relevance of using technology in education includes re-configuration of the instructor's role and breaking the barrier to learning, especially in the case of distance learning. ICT is a diverse set of technological tools and resources used to communicate, create, disseminate, store and manage information.

Imhonopi and Urim (2011) noted that ICTs are modern technologies that facilitate information gathering, processing, transmission, storage and comprise hardware and software components that can be put to heterogeneous use through digitalization connecting individuals and institutions over wide swathes of a geographical area. They further stated that the emergence of ICTs has provided the means for faster and better communication and utilization of information between users, be they individuals, groups, businesses, organizations, or government. Countries around the world have realized the opportunities of the emerging information age characterized by ICT. The potential of ICT in increasing access and improving the quality of education in developed countries is on the high rate (Khan *et al.*, 2012; Lim *et al.*, 2020).

In this modern era, ICT plays a pivotal role in education. Technically, ICT refers to all forms of technologies that are being used for collecting, storing, editing, processing, and passing on information in various forms to the end-user. Some researchers found that in this digital era, ICT can be considered as a fundamental factor in the education sector which has tremendous improvement in the passing of instructions which has turned teaching into a form that embraces independent learning. Practically, ICT has assisted in the mode of dissemination of information which enhances users' mode of operation. The definition of ICT extends beyond gadgets, it is inclusive of electronic technologies that are used for information storage and retrieval. On a broader note, the United Nation reported that ICT cover Internet service provision, telecommunication equipment, and service, media and broadcasting, libraries and documentation centres, commercial information provider network-based information service, and other related information and communication activities for both private or public purpose. Some researchers observed that ICT is an umbrella term that encompasses all communication technologies such as internet, wireless, networks, cell phone satellite communication, and digital television that provide access to information. The role of ICT in the teaching and learning process is to facilitate and enhance students learning process in the 21st century. The inclusion of ICT in the classroom for teaching and learning is very significant.

Earlier studies such as Mathew *et al.* (2015) have established that ICT has been incorporated into the educational system around the globe due to its significance role in effective knowledge impartation. This significance includes the provision of ICT prospect for teachers and students to operate, accumulate, and recover information; promotion of personalized and active learning; self-responsibility for learning such as distance learning; stimulation of teachers and students to sustain learning outside school hours; ease of sharing resources; and planning and preparation of lessons and design materials such as course content delivery against the traditional method of teaching.

The integration of modern technologies into classrooms cannot be withheld in providing opportunities for students to learn new ideas and skills in this digital era. The traditional educational setting seems not to be suitable for preparing learners to function or to be productive in the workplaces of today's technologically advanced society. This incorporation of digital technology in the 21st century is very relevant and any learning institution that does

not integrate the use of these new technologies in its institutions cannot seriously claim to have trained its students for life due to the realities of the 21st century (Ali *et al.*, 2013).

Nowadays, instructions are disseminated via the use of diverse contemporary technological devices or technologies such as computers and other mobile technologies such as Tablet PC, Laptops, Mobile phones, and other devices. Education stakeholder need to integrate ICTs into the educational system for better efficiency and effectiveness of teachers and students. The availability and accessibility of ICT outside of the school encourages the learners' competency which enables them to learn at their own convenient time.

The exchange of information between learner-instructor and learner-learner has been enhanced through the use of ICT applications. This takes place through the effective use of different ICT tools; including computers, radio, television, tablet personal computer, mobile phone, and some other devices. These ICT tools provide a suitable platform for the teaching-learning process. Current development in ICTs has increased the level of interactivity and collaboration among learners and instructors. Given the rate at which ICT has influenced distance learning. The traditional model of Information and resource sourcing especially through the library which is always in printed form had changed. The information, largely in print form has been the most widely accepted format for providing library and resource services to satisfy the needs of library users. It is now being replaced by electronic or digital resources (e-resources) that meet the needs of researchers and information seekers. At a time of ever-increasing demand for information, some researchers opined that the changing academic environment and the recognition of the role of e-resources have brought about a transformation that includes an investment in electronic infrastructure and connectivity and electronic learning, which calls for new approaches in providing educational services to enhance the quality of higher education.

Some researchers described e-resources as those electronic information resources that users access electronically via a computing network from inside the library or remote to the library. The author described further that an electronic resource is a material (data and or program) encoded for manipulation by a computerized device. This material may require the use of a peripheral directly connected to a computerized device (CD ROM) or a connection to a computer network (Internet). E-resources are the materials that require computer access whether through a Personal Computer, Mainframe, or Handheld Mobile device. E-resources may either be accessed remotely via the internet or locally. They include e-journals, e-books, full text (aggregated) databases, indexing and abstracting databases, reference database (bibliographies, dictionaries, directories, encyclopaedias), numeric and statistical databases, e-images, e-audio visual resources, Online Public Access Catalogues (OPAC), and others.

Electronic resources (e-resources) consist of texts, audio, visuals, graphics, and animations in nature that are accessible through the aid of digital technologies. These resources provide access to information far beyond the limits of the libraries' print collections. Electronic resources are becoming an integral part of libraries' resources at academic institutions, and are expected to be used by university students in various academic degrees. This use would increase the variety of resources available for students and which can be accessed everywhere and anytime (Shaqour & Daher, 2010).

The Federal Government plan of action for a decade of ODE in Nigeria recognized that ODE can provide or improve access to education to large numbers of people who missed the opportunity earlier in life or whose present circumstances would not permit them to use the formal school system (Aramide & Bolarinwa, 2010). Researchers in the field of education have recorded much to unravel gender inequality in the assessment of users of technology but without any definite conclusion. Observations had shown that there are differences

between males and females in the pattern of technology usage. This difference in use was found in several different studies. Researchers such as [Oleabhiele and Oleabhiele \(2015\)](#) opined that gender is an unrecognized factor that could influence students' use of technology. This position is also supported by [Gwalala \(2007\)](#) who claimed that gender difference does not exist in students' use and assessment of technology. Contrary to this position, [Kirk and Zander \(2004\)](#) reported that gender has a very influencing factor on ICT use. The researchers reported that a significant gender divide does exist in the assessment of users towards the use of technological resources. They claimed that this divide is a result of high versus low literacy, high versus low income, and rural-urban divide. In another study, some researchers posited that females are less receptive to technology than males, which may mean that male students would be more receptive to e-resources use than female students. As regards this, the positions of researchers on gender difference could be observed to be inconclusive, therefore, this study conceptualized gender as a critical variable to be examined.

As regards users' area of specialization, the study of some researchers examined the factors that influenced the use of e-resources and services in academic and research institutions. The researcher found out that access was limited by lack of skills, lack of awareness of available resources or lack of interest, time, and commitments to use the resources, and some individuals in some fields of specialization are optimally using e-resources than others. Factors affecting the utilization of e-resources that were identified include lack of competence of the e-resources users, lack of knowledge, negative attitudes and poor practices, and inadequate and limited infrastructure. In another study, some researchers found out that the utilization of e-resources was influenced by human and institutional factors including information literacy, low bandwidth, the limited number of resources available to users, and users' field of interest. Thus, the use of e-resources might differ across users' fields of interest and specialization. Therefore, been conceptualized as a major variable in this study.

In Nigeria, a wide gap does exist between the number of tertiary education applicants and the actual number of students admitted annually and also the emergence of Information and Communication Technologies and the curiosity to cater for the needs of qualified students for admission which conventional or face-to-face universities were unable to meet or accommodate due to lack of adequate resources are the major factors that necessitated the introduction of ODE. Hence, the researcher intends to explore the utilization of e-resources for Learning Among Undergraduates Students at the National Open University of Nigeria. Specifically, this study explores:

- (i) examined NOUN undergraduates' utilization of e-resources for learning in Kwara State
- (ii) examined the gender difference in NOUN undergraduates' utilization of e-resources for learning in Kwara State;
- (iii) investigated the difference in NOUN undergraduates' utilization of e-resources for learning in Kwara State based on digital age group;
- (iv) determined the difference in NOUN undergraduates' utilization of e-resources for learning in Kwara State based on the area of specialization.

2. METHOD

The study adopted a quantitative research design of a survey method. This design is found appropriate because it is a scientific method that involves observing and describing the behaviour of the subject without influencing it in any way. Also, this design gives clear definition of the problem and collection of relevant and adequate data. This design therefore will be used to gather information and collect data from the respondents through the use of

a researcher-designed questionnaire. The population for this study consists of all NOUN undergraduates in Nigeria. The target population consists of NOUN undergraduates in Kwara state, Nigeria that shows at **Table 1**. The sample was selected through a multistage sampling procedure: purposive sampling technique was used in selecting NOUN study centres in Ilorin and Offa to serve as the sample institutions. Ilorin and Offa study centres will be chosen purposively because the two centres are open to everyone; proportionate sampling technique was employed in selecting the sample size of 334, and a simple random sampling technique was employed in administering the research instrument (questionnaire).

Table 1. Population and sample size of NOUN undergraduates per study center using research advisor.

Name of Centre	Population	Sample
NOUN Undergraduates in Ilorin Study Centre	526	222
NOUN Undergraduates in Offa Study Centre	158	112
Total Sample Size		334

2.1. Research Instrument

The instrument for this study was a researcher-designed questionnaire which was used in collecting data for this study. The researcher-designed questionnaire is chosen for this study because it is useful for gathering data in real-time from a large sample. The questionnaire contains four sections; Section A would include the demographic information of respondents such as gender and area of specialization; Section B would contain items to determine the available e-resources for learning. Section B will be rated on a Boolean scale of Available and Not Available; Section C would contain items to examine undergraduates' utilization of e-resources for learning. The items in Section C would be rated on a modified Likert Mode Scale of Always Used (AU), Seldom Used (SU), Rarely Used (RU), and Never Used (NU), and Section D will contain items to examine undergraduates' attitude towards e-resources for learning. The Section will be rated on modified Likert Mode Scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) with a weighted value of 4 to 1 in terms of scoring

2.2. Validation of the Research Instruments

Validity explains how well the collected data covers the actual area of investigation (Ghauri & Gronhaug, 2005). Validity means "measure what's intended to be measured" (Field, 2005). The researcher's supervisor peruses the instrument, while three other lecturers in the Department of Educational Technology, University of Ilorin validated the researcher-designed questionnaire. This was done to determine the appropriateness of the questionnaire to ensure the items were free from spelling and grammar errors and to ascertain their face and content validity. They were requested to amend and correct the items of the questionnaire to ascertain those items were consistent with the focus of the study. To determine the reliability of the instruments, a pilot testing was carried out on 20 NOUN undergraduates in NOUN Study Centre, Ibadan, Oyo State, Nigeria.

The study centre involved in the testing was outside the intended sample of the study, 20 copies of the questionnaire were administered for testing. All the copies of the questionnaire were filled and thus were used for the reliability analysis, the results obtained were used to establish the reliability and internal consistency of the instrument using Cronbach alpha at 0.05 level of significant. The results were 0.694 on Availability of Institutional Based E-resources for learning (Section B); while 0.662 on Undergraduates' utilization of E-resources

for Learning (Section C); and 0.699 on Undergraduates' Attitude Towards E-resources for Learning (Section D). The reliability value for the whole instrument revealed 0.811.

2.3. Procedure for Data Collection

The researcher obtained a letter of introduction from the Head of the department, Educational Technology, University of Ilorin, to seek permission from the acceptable authority within the sampled schools to facilitate easy administration of the questionnaires. The researcher read and explained the aim of the study to the participants. The respondents got sufficient time to answer the questionnaire. After which, the researcher personally collected the answered questionnaire and reviewed the qualified and sufficiently completed questionnaire. Insufficient information or a doubtful answer like showing observable patterns was removed for those particular items only. Through the assistance of the statistical analyst, the researchers tabulated the data collected from the participants using Microsoft Excel and eventually process the data collected using SPSS (Statistical Package for Social Sciences).

2.4. Ethical Consideration

Ethical consideration was maintained through the period of data collection. The researcher ensured that respondents were not coerced to fill out the questionnaire and respondents were allowed to participate voluntarily. Also, utmost confidentiality and secrecy of the respondents were maintained during the administration, collation, and report of research findings.

2.5. Data Analysis Techniques

The data collected were analysed employing descriptive and inferential statistics. According to Bhat (2019), descriptive design may be a research design that aims to explain the participant or a phenomenon of the study. Moreover, it aims to answer the question which focuses on the demographic information of the study. This defines respondent characteristics, data trends, and comparison of groups validating existing conditions and duplicating research. To analyse the target of the study which were determining the characteristic of the participants concerning socio-demographic characteristics, digital age group, area of specialization, and utilization of E-resources among undergraduate students for learning, descriptive statistics were used. Moreover, the various specific statistical tools like frequency, percentage, mean, and variance were utilized to measure the quantitative variables to give an overview descriptive of the respondents in analysing the information for socio-demographic characteristics, gender, age, and area of specialization. Hence for the research questions, the researcher-designed questionnaire was structured on a four-point Likert scale, the selection rule was supported the mid-point of the dimensions 2.50. Therefore, items with a mean of 2.50 and above were considered agreed or positive responses, while items below 2.50 were considered disagreed or negative responses.

Furthermore, to check the hypotheses, inferential statistics were employed. Hypothesis one was tested using an independent t-test. Independent t-Test was meant to determine the mean of two groups that both groups are independent of one another (Kim *et al.*, 2019). Using the independent t-test yield on answering to the target of finding the difference between male and female students. To check hypothesis two was also tested with Analysis of variance (ANOVA). ANOVA was meant to determine any statistically significant differences between the means of three or more independent (unrelated) groups. Hence using ANOVA, the researcher was able to determine the difference among Arts Education Science & Technology

Communication & Languages Social Science undergraduates students' utilization of E-resources for learning.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Results Question One: What is the utilization of e-resources for learning among NOUN undergraduates in Kwara State?

In examining NOUN undergraduates' utilization of e-resources for learning in Kwara State, a percentage point scale of 25.0% was adopted. Data collected were analyzed using frequency counts and percentages. As indicated in **Table 2**, higher parts of the responses were skewed towards the "used" responses, but at a different frequency, implying that the majority of NOUN students utilize e-resources for learning. As revealed in the **Table 2**, the majority of the students claimed that they always use online research reports (47.2%), e-books and e-manuscript (44.3%), e-magazines (44.3%), educational CDs (42.1), online maps (44.0%), online instructional audio (41.8%), and online instructional videos (40.6%). Equally, the majority of the participants claimed that they seldomly use online newspapers (44.0%) and e-libraries platforms (41.2%). Cumulatively, the total percentage point scale of 41.9% which is the greatest among the cumulative total and greater than the benchmark of 25.0% indicated that NOUN undergraduates in Kwara State always utilize e-resources for learning.

Table 2. Utilization of e-resources for learning.

S/N	Item	Always Used	Seldom Used	Rarely Used	Never Used
		Freq (%)	Freq (%)	Freq (%)	Freq. (%)
1	Educational CDs	134 (42.1)	113 (35.5)	37 (11.6)	34 (10.7)
2	e-libraries platform	130 (40.9)	131 (41.2)	37 (11.6)	20 (6.3)
3	e-books and e-manuscript	141 (44.3)	123 (38.7)	40 (12.6)	14 (4.4)
4	e-journals	131 (41.2)	128 (40.3)	42 (13.2)	17 (5.3)
5	e-magazines	141 (44.3)	128 (40.3)	40 (12.6)	9 (2.8)
6	Online newspapers	122 (38.4)	140 (44.0)	38 (11.9)	18 (5.7)
7	Online research report	150 (47.2)	115 (36.2)	39 (12.3)	14 (4.4)
8	Online news	124 (39.0)	119 (37.4)	41 (12.9)	34 (10.7)
9	Online maps	140 (44.0)	119 (37.4)	37 (11.6)	22 (6.9)
10	Online instructional videos	129 (40.6)	124 (39.0)	38 (11.9)	27 (8.5)
11	Online instructional audio	133 (41.8)	118 (37.1)	36 (11.3)	31 (9.7)
12	Online catalogues	123 (38.7)	134 (42.1)	40 (12.6)	21 (6.6)
	Cumulative Total	1598 (41.9)	1492 (39.1)	465 (12.2)	261 (6.8)

3.1.2. Results Question One: There is no significant difference between male and female NOUN undergraduates' utilization of e-resources for learning in Kwara State

From **Table 3**, it can be deduced that there was a significant difference between male and female NOUN undergraduates' utilization of e-resources for learning in Kwara State. This is reflected in the findings of the hypothesis tested $df (316)$, $t= 3.214$, $p<0.05=0.001$. Thus, the hypothesis which states that "there is no significant difference between male and female NOUN undergraduates' utilization of e-resources for learning in Kwara State" is rejected.

Table 3. Independent sample *t*-test analysis of gender difference in noun undergraduates' utilization of e-resources for learning.

Gender	N	X	SD	df	t	Sig. (2-tailed)	Remark
Male	118	3.07	0.334	316	3.214	0.001	Rejected
Female	200	3.21	0.379				

3.1.3. Hypothesis Two: There is no significant difference in NOUN undergraduates' Utilization of e-resources for learning in Kwara State based on the digital age group

Table 4 revealed the ANOVA of difference in NOUN undergraduates' utilization of e-resources for learning in Kwara State based on digital age group. The result revealed that "there was no difference in NOUN undergraduates' utilization of e-resources for learning in Kwara State based on digital age group" ($F_{(3,317)} = 0.589$, $p > 0.05 = 0.555$). The null hypothesis is therefore accepted. **Table 5** revealed the ANOVA of difference in NOUN undergraduates' utilization of e-resources for learning in Kwara State based on the area of specialization. The result revealed that "there was no significant difference in NOUN undergraduates' utilization of e-resources for learning in Kwara State based on the area of specialization" ($F_{(3,317)} = 0.649$, $p > 0.05 = 0.584$). The null hypothesis is therefore accepted.

Table 4. Analysis of variance (ANOVA) of noun undergraduates' utilization of e-resources for learning based on digital age group.

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	0.161	2	0.080	0.589	0.555
Within Groups	42.916	315	0.136		
Total	43.077	317			

Table 5. Analysis of variance (anova) of noun undergraduates' utilization of e-resources for learning based on area of specialization.

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	0.265	3	0.088	0.649	0.584
Within Groups	42.811	314	0.136		
Total	43.077	317			

3.2. Discussion

This study is premised on the pivotal role ICT plays in the ODE system, which provided a transition from the traditional model of information and resource sourcing which are always in printed form are now changed to soft copy format, widely known as e-resources. had changed such as handouts and hardcopy textbooks. Lesson contents which used to be largely in print form have been the most widely utilized format for providing instructional resources to satisfy the needs of learners. In enhancing the use of the e-resources, several policies and regulations were enacted in the Nigerian ODE system which was targeted towards influencing both facilitators and learners to consult a wide range of instructional content residential on the worldwide web. Contrarily, the majority of the undergraduates at NOUN are usually seen carrying loads of learning materials, which is contrary to the expectation of the NOUN creation and public expectations. Consequent to this, e-resources are observed to be rarely utilized among undergraduates at NOUN. Thus, the study conceptualized undergraduate's

attitude as a key component that could influence their lack of use and also presumed that personal qualities such as gender, digital age group, and area of specialization could be a contributory factor. Significant to this study, this study found that e-resources such as online instructional audio, video, and catalogues, e-books and e-manuscript, e-journals, e-libraries platform, online research report and newspapers, e-magazines, online news and maps, and educational CDs were available for learning among NOUN students in Kwara State.

This finding supports the earlier position of some researchers who posited that the rate at which ICT has influenced distance learning cannot be overemphasized. This study concluded that the changing academic environment and the recognition of the role of e-resources have brought about a transformation leading most institutions across the world to invest in electronic infrastructure and connectivity to enhance the quality of higher education. Other findings such as the finding by [Robinson \(2009\)](#) and [Nwana et al. \(2017\)](#) also supported the finding of this study. This study concluded that with the presence of e-resources, the effective use of e-learning is now widespread in distance education. Some researchers support the findings of this study by revealing that the majority of students use e-resources frequently. Contrarily, this study negates the findings of [Ojo and Akande \(2015\)](#) who revealed that the level of usage of the e-resources is low among students. It also negates the conclusion of [Majid and Tan \(2012\)](#) who reported that students consider print resources more useful for their study needs than e-resources.

This study found that NOUN undergraduates' gender influences the utilization of e-resources for learning, while not influencing their attitude towards e-resources use. Researchers over the years have reported differing findings as regards gender differences in technology adoption, integration, and use. These differing findings indicated that gender difference issues remain inconclusive. In the light of this, this study found out that as students utilize e-resources, there is a parity in its use according to gender, with females using e-resources more than their male counterparts. This finding of this study equally found that there was no difference in NOUN undergraduates' utilization and attitude towards e-resources for learning in Kwara State based on the area of specialization. This finding supports the view of [Knight \(2013\)](#) who observed that undergraduate students irrespective of their area of specialization are looking for a convenient, time-saving, and fast response as they move from using physical collections to the digital library in the various university campuses. This study negates the findings of [Singh et al., \(2019\)](#) who claimed that part of the factors that contribute to the differing rate of e-resources use is the users' field of study. This study noted a shift in focus of the inquiry and attributed the differences to factors like language proficiency, computer literacy, and information literacy.

4. CONCLUSION

The phenomenal global uptake of NOUN as a strategic vehicle for expansive and comprehensive development through enhanced access to education and training shows the importance of distance education in Nigeria. With the combination of e-resources, NOUN has helped in solving the challenges of the educational gap, social and geographic dislocation, and marginalization. Certainly, the proliferation and availability of e-resources have transformed the traditional model of information and resource sourcing, especially through the library which is always printed. With the affordances of e-resources, the needs of students concerning information-sourcing are now satisfied. The recognition of the advantages of e-resources led most academic institutions, especially NOUN to provide platforms for information sourcing, particularly has the institution drive on ICT. This transformation is paying off, and this has led to its wide usage among undergraduates and positively influenced

their attitude towards its use without gender difference or digital age divide nor difference in the area of specialization. This study has provided evidence that students' ability to explore digital technologies such as e-resources is dependent on the availability and attitude towards the digital technologies. A lack of these will result in a lack of use. In line with this, NOUN stakeholders are enjoined to make efforts in making emerging technologies available and should allow students to explore these technologies to maximize their potential.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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