

## Digital Resources Usage and Academic Performance of Undergraduate Students in Nigeria: A Case Study

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### ABSTRACT

The study examined digital resources (DR) usage and academic performance of undergraduate students at the University of Africa, Toru-Orua, Bayelsa State, Nigeria (UAT). Four research questions and one hypothesis guided the study. The researchers used a descriptive survey design. The population of the study comprised 1,500 students at UAT, in the 2020/2021 academic session. The questionnaire was the instrument used for data collection. The questionnaire was validated by educational technology experts. Cronbach's alpha was used to establish the reliability of the instrument which yielded 0.98. The instrument was administered by the researchers to all the students and was able to retrieve 1,342, which comprised 100 to 400 level students. Data were analyzed with frequency count, simple percentages, and statistical product and service solutions version 23 was used to generate the mean, standard deviation while Pearson's product-moment correlation coefficient was used to test the hypotheses at 0.05 significant levels. The findings revealed that the level of usage of DR is low as only 4% of the students made use of DR daily. The study established that the students made use of the Internet resources, e-books, and online educational videos on YouTube, e-journals, and e-newspapers. It was also revealed that the students had a positive perception of the impacts of DR usage on their academic performance. Lastly, the test of the hypothesis one showed that there is a significant relationship between DR usage and the academic performance of undergraduate students at UAT. This implies that the increase in the DR usage do definitely increase the performance of the students at UAT. Result from hypothesis two revealed that there is a significant effect of DR usage on academic performance of students at UAT. Based on the findings, the researchers recommended that the university library management should create more awareness on the use of DR by conducting workshop, seminars, and through the use of social media platforms like Facebook, Twitter, and WhatsApp and hands-on training on the use of these resources should be actively promoted.

**Keywords:** digital resources, usage, academic performance, students perceptions, the University of Africa

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### INTRODUCTION

The university library is an important aspect of the educational system, with the primary goal of providing users with relevant information resources to aid in teaching, learning, and research. These materials are crucial in providing library services to patrons. Previously, information resources were mostly printed, but in the current era of information technology, digital resources (DR) have grown rapidly, with new ones appearing at regular intervals. As a result, university libraries in developing nations are attempting to adapt their services to these new realities while also serving users who rely on more traditional resources. With the world increasingly shifting into digital media and information, DR has become an inseparable element of the educational system and has played a key role in assisting higher education institutions in achieving their goals (Anjana, 2016). In comparison to manual searches, the introduction of DR has provided students with

much-needed comfort, ease, and timely information for learning, completing academic projects, and conducting research (Mawere & Sai, 2017). As a result, DR are now important resources in every university library, demonstrating a commitment to bringing information closer to users in a more trustworthy and easy manner.

The term "digital resources" refers to information resources that can be accessed through the Internet-connected devices. Electronic journals, electronic books, online databases, locally loaded databases, websites, CD-ROM, electronic text, e-news, e-images, and electronic music are all examples of DR. DR has been hailed as one of the most essential sources of information for students (Ternenge & Kashimana, 2019), as it offers them current and relevant information on a variety of topics. Digital resources are 'handier' than print resources because it enables access to materials that might otherwise be denied to consumers owing to geographic location, economics, or other constraints (Anunobi & Okoye, 2008; Lo et al., 2017). DR provides students with

new opportunities that earlier generations did not have. DR can be used to encourage students to learn actively and independently while also collaborating with others. According to Adeniran (2013), DR has the potential to increase students' academic performance by providing them with appropriate and up-to-date information items.

Every student expects to succeed in their academic endeavors. Academic performance refers to a student's overall academic achievement or the amount to which he or she has met his or her educational objectives. Academic performance, according to Sivathaasan and Velnampy (2013), is defined as a student's achievement of their educational goals. Student performance is evaluated at educational institutions through a variety of methods, including classroom performance, class assignments, tests, group seminars, examinations, and more. Academic success, according to Adeyemo (2012), has a significant impact on a student's self-esteem, desire, and tenacity in pursuing educational goals. Aremu (2000) distinguished between excellent and poor academic achievement. According to him, a good academic achievement is regarded as being above average. A good academic performance exceeds a ceiling or stated standard, whereas a poor academic performance falls below an expected norm.

The issue of poor academic performance among Nigerian undergraduates has been a source of worry for many education stakeholders. Most tertiary institutions in Nigeria are not suited for quality education, especially in this era of digitization, which could explain students' poor academic achievement. Most students in Nigeria, according to Ukwetang et al. (2021), do not have access to the Internet resources that would help them improve their learning abilities and academic performance in general. Students and instructors in Nigeria, according to Awojide (2020), do not have appropriate Internet connectivity, which has become a big concern in today's universities. The failure to use the Internet for teaching, learning, and research, especially at the tertiary institution level, has had a negative impact on the quality of degree holders we graduate from Nigeria (Sanjeev et al., 2008). Even when the Internet services are available, there is a lack of electricity and insufficient connectivity, which can frustrate students and make it difficult for them to convey their information effectively. This could have a negative impact on academic performance and advancement. In contrast to the majority of developed countries, where the students have ample access to Internet services and resources.

This, however, suggests that the availability of Internet services and proper use of DR could be the answer to students' poor academic achievement. This is because the use of DR in higher education promotes more student-centered learning environments by allowing for remote access, ease of use, increased readership, and improved services, all of which lead to more opportunities for productive research output and academic excellence in a short period (Anjana, 2016). As a result, providing students with proper access to and usage of DR will increase their learning ability and academic performance.

Moret (2000) claims that students who adjust to the current trend of using DR can see a significant difference between the outcomes of using printed and DR. According to Montenegro et al. (2016), students' academic achievement is influenced more by DR (electronic journals and online databases) than by the number of printed items borrowed from the library. Academic libraries' acquisition of DR has aided in the reduction of the cost of education for students, and many have pondered if its use provides additional benefits such as improved student learning results. This question has sparked a frenzy of empirical

research, but the results have been mixed. However, the effectiveness of DR in improving student academic performance may be influenced by a variety of circumstances, including the students' attitude toward its integration into their studies. The way one uses DR decides whether the tool is beneficial or damaging to one's academic success. The use of DR is thought to have a good impact on a student's efforts and, as a result, on performance.

The University of Africa, Toru-Orua, Bayelsa State, Nigeria (UAT) is a state-owned university in the Nigerian State of Bayelsa. As a result of the growing demand for DR, the university library invested a substantial amount of money to subscribe to DR to better serve students and faculty's teaching, learning, and research needs. The university library prepared various training sessions to enable students to obtain knowledge on how to access and use these resources in their educational and research work, to ensure that these resources are optimally exploited by students to boost student's academic accomplishment. Although these resources were purchased with the greatest of intentions, no research has been done to see if their use has a good impact on a student's academic achievement. This research is significant because it will assist assess the extent to which students utilize DR and whether or not their use has improved their academic performance. It is on this note, therefore, that this study examined DR usage and students' academic performance at UAT.

### Statement of the Problem

The rapid rise of DR in the 21st century has provided new chances for students to transcend the limits of printed materials in terms of time and location. Adequate access to and usage of DR can assist students to improve their learning abilities and academic performance. However, the rise in students' low academic performance in our university system today can be ascribed to a flaw in our educational institutions, which are not equipped to provide excellent education, particularly in this digital age. Most students in our tertiary institutions do not have enough Internet access because not all higher institutions in Nigeria are networked or connected to the Internet, possibly due to the expensive cost or neglect. As a result, the majority of students are unable to make use of the benefits or rewards offered by DR, resulting in lower or no learning achievement. In the light of the aforementioned issues, the purpose of this study is to examine if appropriate access and use of DR will help Nigeria's educational system grow in terms of students' academic achievement in higher education institutions. This study is significant because there is a scarcity of research on DR use and student academic achievement in poor nations. It is on this note, therefore, that this study examined DR usage and academic performance of undergraduate students at UAT.

### Objectives of the Study

The main objective of this study is to examine DR usage and academic performance of undergraduate students at UAT. The specific objectives are, as follows:

1. To ascertain the level of DR usage by undergraduate students,
2. To identify the types of DR used by students,
3. To determine the perceptions of students on the impacts of DR usage on the academic performance, and
4. To determine the impact of DR usage on the academic performance of students.

## Research Questions

The following questions will guide the study:

1. What is the level of DR usage by undergraduate students at UAT?
2. What are the types of DR used by students?
3. What are the perceptions of students on the impacts of DR usage on academic performance?
4. What is the students' academic performance in the 2020/2021 academic session?
5. Is there any relationship between DR and academic performance?
6. Is there any effect of DR usage on academic performance of students?

## Hypothesis

The following hypotheses were tested at 0.05 significant level:

1. There is no significant relationship between DR usage and the academic performance of undergraduate students at UAT.
2. There is no significant effect of DR usage on academic performance of students?

## LITERATURE REVIEW

Few studies have been undertaken on undergraduate students' use of DR and academic performance. A review of some of these investigations is offered in this section. In a Chilean research-centered institution, Montenegro et al. (2016) investigated the use of library resources and learning outcomes. The study looked at data from student records, library borrowing, and library access to DR for two semesters. Access to DR had a bigger impact on performance than the number of library items borrowed, according to the findings. They also reveal that as students proceed through their degrees, an increase in the number of sessions dedicated to accessing DR was accompanied by a decrease in the number of library items borrowed.

Burk et al. (2013) conducted research at Carleton University on the impact of numerous digital learning materials on student academic achievement. The goal is to see if there are any links between students' usage of these materials and their performance on two midterm examinations, a final exam, and their ultimate grade at the end of the course. The study included 919 undergraduate students at Carleton University who were enrolled in a first-year chemistry course. The data reveal that students did use the instructor's resources and tools and that many of them have a favorable correlation with students' grades. The homework management system (WileyPlus) and learning management system (WebCT), in particular, have the most significant positive effects on grade performance because they both contain resources and activities that encourage students to spend time on tasks, solve problems, interact with course content, and interact with one another. Finally, the study suggested that instructors should explore leading and directing novice learners to use the most helpful DR by choosing resources that prioritize time-on-task and problem-solving. Instructors may choose to address good learning practices directly in class or provide an online guide.

At the University of Jaffna, Sri Lanka, Sivathaasan and Velnampy (2013) investigated the use of DR and the academic achievement of

university professors. The study's population consisted of 294 academic employees, with 88 samples drawn from each of the five faculties using a stratified random selection technique. This study was conducted from March to April 2013, and 75 questionnaires were returned. Data was collected on characteristics related to the use of DR and academic performance. To verify the operational hypotheses, the study used a correlation and regression model, and the results demonstrated that using DR had a substantial positive relationship with academic achievement ( $r=0.623$ ,  $p=0.01$ ). Using multiple regression analysis, it was discovered that using DR has a 38.8% ( $R^2=0.388$ ) impact on academic achievement, which is statistically significant at the level of 0.01 ( $p=0.01$ ). This study would be extremely beneficial to research scholars by examining the impact of DR consumption on academic performance. Academic personnel should continue to utilize the many e-resources made accessible to them, according to the report.

Kipkosgei (2020) investigated the link between the use of DR and the academic achievement of Jomo Kenyatta University of Agriculture and Technology (JKUAT) undergraduate information technology students. The study employed a descriptive survey research approach. The students in the Department of Information Technology were the respondents. A stratified sampling strategy was utilized to choose 105 students for the study. Closed-ended questionnaires were used to obtain data. The hypothesis and overall model were tested using univariate and multiple regression analysis, respectively. The study discovered that e-books, e-journals, and online previous test papers have a good and substantial link with academic achievement. More policies should be implemented to enable students to access a variety of online past test papers, not just from the JKUAT library, but also from government examination bodies such as the Kenya National Examination Council. The study also recommended that JKUAT make more e-journal articles and e-books available to students because they have a substantial impact on their academic achievement.

In the Nigerian context, Olabode (2016) looked examined the impact of using DR on undergraduate students' academic performance in Nigeria. The study was conducted as a survey with the use of questionnaires. All final year students of the faculties of social science, humanities, and science at Federal University Oye-Ekiti, Nigeria, for the 2015/2016 academic session were included in this study. A total of 150 students were picked using a basic random sampling method. The acquired data was quantitatively evaluated using the statistical package for social science (SPSS). The findings were presented in the form of graphs and tables. 144 of the 150 questionnaires issued were filled and returned, accounting for 96% of the total. The utilization of technological resources has a positive impact on student's academic achievement, according to the findings. Based on the findings of this study, it is suggested that more focus be placed on the acquisition of DR to provide for greater and more diverse access to information resources to meet the information needs of a wide range of users.

At the Redeemer's University, Adeniran (2013) conducted research on undergraduates' use of DR. 256 students in grades 200 and up who used the library during the study period made up the study's population. The study was conducted using a survey research method. The instrument used to collect data was a questionnaire. The collected data were analyzed using frequency counts and simple percentages. The study found that using DR had a significant impact on undergraduate students' academic performance at Redeemer's University; nonetheless, they need to improve their skills in using DR.

Okorie et al. (2018) looked into the impact of using DR on HND students' academic performance at Federal Polytechnic, Nekede, Owerri. The study was descriptive and used a quantitative survey method with a questionnaire as the data gathering tool. The 385 students in the Department of Library and Information Science that participated in the study. Due to the study's reasonable size, the complete population was used. The mean and standard deviation were used to analyze the data. The data demonstrated that HND students used DR daily for academic objectives, such as assisting them with assignment and seminar paper completion. The use of DR influenced a bigger percentage of responders' performance in seminar writing and presentation in a good way. Electronic books were discovered to be the most popular academic resource among students. The biggest problems that students encounter in using DR, according to the study, are epileptic power supply and access cost. As a result, it was advised that consistent provision of electric power and a reduction in the cost of accessing the Internet be considered as potential solutions to the highlighted concerns in students' use of DR.

## THEORETICAL FRAMEWORK

This study's theoretical framework is based on Rogers' diffusion of innovation theory, which he proposed in 1962. This theory is concerned with the transition from creation to the usage of new tools/technologies, approaches, ideas, and so on. The diffusion of innovation theory describes how an idea or product acquires traction over time and diffuses (or spreads) through a population or social system before being adopted. Five primary characteristics that drive innovation adoption, according to Rogers. These are, as follows:

1. **Relative advantage:** The extent to which an invention is thought to be superior to the idea, program, or product it is intended to replace.
2. **Compatibility:** How well does the innovation align with the potential adopters' values, experiences, and needs.
3. **Complexity:** This is the degree to which new technology is thought to be difficult to comprehend and use. Simpler-to-understand ideas are adopted more quickly than advances that need the adopter to acquire new skills and knowledge.
4. **Triability:** The extent to which an idea can be tried or experimented with before deciding to adopt it.
5. **Observability:** The degree to which the innovation has a measurable impact.

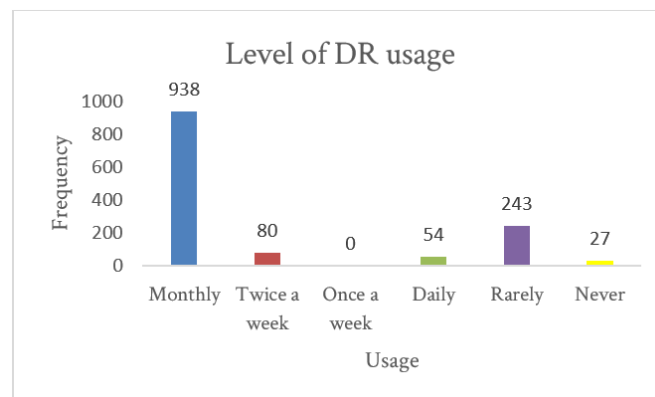
As a result, for an innovation like DR to achieve acceptance and be used by university students, it must appear to them to be more valuable and superior than printed resources. It should be perceived as being in line with the beliefs and needs of university students, as well as being very user-friendly. In other words, students' perceptions of an innovation's utility and simplicity of use, such as DR, may inspire them to use them, thereby enhancing their academic performance.

## METHODOLOGY

A descriptive survey design was used in this investigation. The study's population comprised 1,350 students at UAT in the 2020/2021 academic session. The entire population was used for the study due to

**Table 1.** Level of DR usage by undergraduate students at UAT

	Frequency	Percentage (%)
Monthly	938	69.8
Twice a week	80	6.0
Once a week	0	0.0
Daily	54	4.0
Rarely	243	18.1
Never	27	2.0
<b>Total</b>	<b>1,342</b>	<b>100</b>



**Figure 1.** Level of DR usage by undergraduate students at UAT

the manageable size, therefore, sample size was not used in the study. The data was collected using a questionnaire created by the researchers and tagged as 'DR usage and academic performance of undergraduate students.' Experts in educational technology evaluated the questionnaire. The researchers gave the instrument to all of the students and were able to get 1,342 responses, with students ranging from 100 to 400 levels. For research questions 1 to 4, a four-point Likert scale of 'strongly agree,' 'agree,' 'disagree,' and 'strongly disagree' response types were utilized. Because each student's viewpoint is important, a four-point Likert scale was used. Cronbach's alpha was employed to determine the instrument's reliability, and the result was 0.75. The questionnaire was deemed credible based on the coefficient obtained. For research question 1, above 50% of DR daily usage was adjudged as high-level usage while below 50% of DR daily usage is adjudged as low-level usage. Similarly, for research question 3, a mean response of less than 2.5 was classified as "negative perceptions," while a mean response of 2.5 or more was classified as "positive perceptions." The mean and standard deviation were calculated using SPSS version 23, and Pearson's product-moment correlation coefficient and linear regression were used to test the hypotheses at 0.05 significant levels.

## RESULTS

**Research question one:** What is the level of DR usage by undergraduate students at UAT?

**Table 1** revealed that 938 (69.9%) of the respondents made use of DR monthly, 243 (18.1%) of the respondents rarely used the DR, 80 (6%) of the respondents made use of DR twice a week, 54 (4%) of the respondents made use of DR daily, while 27 (2%) of the respondents never made use DR. This implies that the level of the DR usage by the undergraduate students in UAT was low with 4% of the respondents using it daily. This is represented in the bar chart in **Figure 2**.

**Table 2.** Types of DR used by students

Types of DR	Mean	Standard deviation
Internet resources	3.52	0.73
E-books	3.24	0.84
E-journals	2.96	1.02
Online database	3.10	0.75
E-newspapers	2.60	1.04
Online educational videos on YouTube	3.22	0.92
<b>Grand mean</b>	<b>3.11</b>	<b>0.88</b>

**Table 3.** Perceptions of students on the impacts of DR usage on academic performance

S/N	Perceptions of students	SA	A	D	SDA	M	SD
1	My use of DR increases my research productivity	807 (60.1%)	535 (39.9%)	-	-	3.6	0.49
2	My use of DR assists me with current literature	672 (50.1%)	643 (47.9%)	27 (2%)	-	3.48	0.54
3	My use of DR influences my performance in-class assignment	699 (52.1%)	616 (45.9%)	27 (2%)	-	3.5	0.53
4	My use of DR has improved my level of literature search	539 (40.2%)	749 (55.8%)	27 (2%)	27 (2%)	3.34	0.62
5	My use of DR influences my performance in seminar writing & presentation	619 (46.1%)	669 (49.9%)	54 (4%)	-	3.42	0.57
6	My use of DR influences my performance in the examination	620 (46.2%)	668 (49.8%)	27 (2%)	27 (2%)	3.4	0.63
7	My use of DR influences my performance in-class test	564 (42%)	670 (49.9%)	54 (4%)	54 (4%)	3.3	0.73
	<b>Grand mean</b>					<b>3.43</b>	<b>0.59</b>

Note. SA: Strongly agree; A: Agree; D: Disagree; SDA: Strongly disagree; M: Mean; & SD: Standard deviation

**Table 4.** Students' academic performance in 2020/2021 academic session

Class of degree	CGPA	Number of students	Percentage (%)	Remark
1 <sup>st</sup> Class honors	4.50-5.00	673	50	Excellent
2 <sup>nd</sup> Class honors (upper division)	3.50-4.49	320	24	Credit
2 <sup>nd</sup> Class honors (lower division)	2.40-3.49	322	24	Pass
3 <sup>rd</sup> Class honors	1.50-2.39	27	2	Weak pass
<b>Total</b>		<b>1,342</b>	<b>100</b>	

Note. CGPA: Cumulative grade point average

**Table 5.** Pearson product moment correlation of relationship between DR usage & academic performance of undergraduate students at UAT

Variable	n	r	p-value
DR usage & academic performance	1,342	0.74	0.006

Note.  $\alpha=0.05$

**Research question two:** What are the types of DR used by students?

**Table 2** indicated the types of DR used by undergraduate students at UAT. **Table 2** also shows the grand mean of 3.11, which is above the criterion mean of 2.5. This implies that the respondents do make use of Internet resources, e-books, online educational videos on YouTube, e-journals, and e-newspapers, with their means above 2.5.

**Research question three:** What are the perceptions of students on the impacts of DR usage on academic performance?

**Table 3** shows the perceptions of students on the impacts of DR usage on their academic performance. **Table 3** also shows that all the mean responses of the respondents are above the criterion mean of 2.5, and the grand mean of 3.43 is greater than the criterion mean of 2.5.

This implies that a great number of students at UAT, agreed that DR do increase their research productivity; influences their performance in-class assignments; assist them with current literature; influences their performance in seminar writing and presentation; influences their performance in examinations; improved their levels of literature search; and influences their performance in-class tests. Therefore, there is a positive perception of students on the impacts of DR usage on their academic performance.

**Research question four:** What is the students' academic performance in the 2020/2021 academic session?

**Table 4** shows the academic performance of students in the 2020/2021 academic session.

The data in **Table 4** shows that 50% of students are in excellent positions, 24% of students are credit and pass positions respectively, while 2% of the students are in weak pass position, which is poor result. This shows that the majority of the students performed excellently, and it is as a result of their use of DR.

**Hypothesis one:** There is no significant relationship between DR usage and the academic performance of undergraduate students at UAT.

**Table 5** shows the relationship between DR usage and academic performance of undergraduate students at UAT, with a high positive correlation coefficient of 0.74, and a p-value of 0.006. This high positive correlation shows that the increase in DR usage leads to increase in academic performance of students, and also the decrease in DR usage leads to decrease in academic performance of students.

Testing the hypothesis at a 0.05 alpha level of significance, the p-value (0.006) is less than the alpha value of 0.05, therefore, the null hypothesis states that 'there is no significant relationship between DR usage and academic performance of undergraduate students at UAT' is rejected. Consequently, there is a significant relationship between DR usage and the academic performance of undergraduate students at UAT.

**Hypothesis two:** There is no significant effect of DR usage on academic performance of students.

**Table 6.** ANOVA & model summary testing significant effect of DR usage on academic performance of students

Model	Sum of squares	df	Mean square	F	Sig.	Model
1	Regression	1,547.547	1	1,547.547	7.464	0.006
	Residual	277,830.301	1,340	207.336		
	Total	279,377.849	1,341			

Note.  $R=0.074$ ;  $R^2=0.006$ ; Adjusted  $R=0.005$ ; &  $\alpha=0.05$

**Table 7.** Linear regression testing significant effect of DR usage on academic performance of students

Construct	Beta	R	t	p-value
(Constant)	77.007		24.685	0.000
DR usage	0.352	0.074	-2.732	0.006

Note. Dependent variable: Students' academic performance &  $\alpha=0.05$

**Table 6** and **Table 7** show the ANOVA and model summary, and linear regression test of significant effect of DR usage on academic performance of students. Results indicate that the use of DR do significantly impact on the students' academic performance ( $F(1, 1,340)=7.464$ ,  $p<0.05$ ;  $\beta=-0.352$ ;  $r=0.074$ ). This means that the p-value is less than the alpha value of 0.05, therefore the null hypothesis is rejected. Also, the correlation coefficient indicates a positive significant effect of DR usage on students' academic performance. This implies that an increase in DR usage do lead to increase in the students' academic performance at UAT. In addition, the model indicates that the students' use of DR explained 0.6% ( $R^2=0.006$ ) variation of their academic performance.

## DISCUSSION

Research question one found that undergraduate students in the selected school utilize DR occasionally, with only 4% of undergraduate students using DR daily. This study's findings are consistent with those of Adeniran (2013), who discovered that students at Redeemers University in Nigeria use DR at a low rate. However, the findings of this study differ from those of Nwokocha and Ibenne (2018), who showed that HND students at Federal Polytechnic, Nekede, used DR every day for academic purposes in their study.

Research question two revealed that the respondents at UAT use the Internet resources, e-books, online instructional videos on YouTube, e-journals, and e-newspapers, according to research question two. This study's findings are consistent with those of Okoria et al. (2018), who discovered that electronic books are the most common resource available to HND students at Federal Polytechnic, Nekede, Nigeria. Furthermore, the findings of this study are similar to those of Alhassan and Macaulay (2015), who discovered that some electronic resources, such as the Internet, e-mail, online databases, electronic databases, and electronic journals, were heavily used by respondents, while others, such as CD-ROM databases, electronic journals, online public access catalogue, and electronic books, were rarely used by respondents in Federal University of Technology, Minna and Ibrahim Badamosi University, Lapai.

Students had a favorable assessment of the effects of DR usage on their academic achievement, according to research question three. Students believe that using DR improves their research productivity, influences their performance in class assignments, assists them with current literature, influences their performance in seminar writing and presentations, influences their performance in exams, improve their levels of literature search, and influences their performance in-class

tests. The findings of this study are consistent with those of Okorie et al. (2018), who found that a greater number of HND students at the Federal Polytechnic, Nekede, Nigeria, attested that using DR aids them in completing assignments and seminar papers, as well as influencing their performance in seminar writing and presentation.

Hypothesis one result revealed that there is a significant relationship between DR usage and academic performance of undergraduate students at UAT. This implies that the increase in the DR usage do definitely increase the performance of the students at UAT. The findings of this study agree with the findings of Sivathaasan and Velnampy (2013), who examined the use of DR and academic performance of university teachers in University of Jaffna, Sri Lanka, and revealed that usage of DR has a strong positive association with academic performance ( $r=0.623$ ,  $p<0.01$ ). Moreover, Kipkosgei (2020) found that there is a positive and significant relationship between e-books, e-journals, online past examination papers and academic performance.

Result from hypothesis two revealed that there is a significant effect of DR usage on academic performance of students at UAT. The findings of this study also agree with the findings of Sivathaasan and Velnampy (2013), who found that the usage of DR has an impact on academic performance at the rate of 38.8 % ( $R^2=0.388$ ), which is statistically significant.

## CONCLUSION

According to the findings of the study, undergraduate students in the selected school use DR at a low level; respondents in UAT, do use DR; students have good and positive perceptions of the impacts of DR usage; and there is a significant relationship between DR usage and academic performance of undergraduate students at UAT and the use of DR has an impact on the students' academic performance.

### Recommendations

Based on the findings and conclusion, it is recommended that:

1. The university library management should create awareness of the use of DR for undergraduate students by conducting workshops, seminars, and through the use of social media platforms like Facebook, Twitter, and WhatsApp.
2. Information retrieval skills using information technology should be included in the curriculum for the undergraduate students to be able to make use of these DR effectively. Hands-on training on the use of these resources should be actively promoted.

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