

IMPROVING OPTIMAL UTILIZATION OF LIBRARY ELECTRONIC DATABASE FOR RESEARCH PRODUCTIVITY AMONG POSTGRADUATE STUDENTS IN FEDERAL UNIVERSITIES IN SOUTH-SOUTH, NIGERIA

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Abstract

The study investigated the optimal utilization of library electronic databases for research productivity among postgraduate students in Federal universities in South-South, Nigeria. Four specific objectives covered the study; the total population of this study consists of 9536 postgraduate students in 238 departments in 36 faculties in the 2020/2021 academic year in the six federal university in south-south, geopolitical zone in Nigeria. The sample for this study is 480 postgraduate students. The instrument used for data collection is structured questionnaire and observation checklist. Data was analyzed with the use of mean and standard deviation for answering the research questions. The findings showed that out of nineteen (19) electronic databases listed in the study, an aggregate of fifteen (15) were available while four are not available. The major ones include: JSTOR, AC Digital, ERIC, EconLit, Google scholar, proquest, EBSCohost, project MUSE, Pub, Med, Scopus, Postgraduate students to a very large extent possesses competencies in world processing, information retrieval, online research ethics, data analysis and computer literacy. It also showed that the challenges postgraduate students face in the use of electronic databases in federal universities in south-south, Nigeria include; apathy towards information technologies, phobia for information technology operation, poor computer literacy education, erratic power supply, unavailability of a particular database. The study also revealed that strategies for enhancing optimal utilization of library electronic databases for research productivity among postgraduate students include: Provision of adequate finance , Sensitization programs, Subscription to relevant databases , Current awareness services (CAS), Proper orientation programs, Provision of stable network connectivity. It was recommended among other that training and retraining should be regularly conducted to ensure postgraduate students are proficient in using library electronic databases.

Keyword: optimization, electronic database, research productivity and postgraduate students

Introduction

Optimal utilization of library electronic database for research productivity in University Libraries is redefining the conduct of teaching and research in universities all over the world,

particularly in developing countries such as Nigeria. Electronic database uses in universities have tremendous benefits to research productivity of researchers, postgraduate students and academic staff. One significant benefit is that researchers gain access to wide range of current and quality information materials not minding the location. Since the university remains centre of excellence, citadel of learning and epitome of research, its importance is enormous.

An e-database is define, according to Dudley, (2011) as an organized collection of information, of a particular subject or multi-disciplinary subject areas. Naqvi, (2012), in her work which studied use of electronic databases by postgraduate students and research scholars, defined an electronic database as a large, regularly updated file of digitized information (bibliographic records, abstracts, full –text documents, directory entries, images, statics, etc.) related to a specific subject or field, consisting of records of uniform format organized for ease and speed of a search and retrieval and managed with the aid of database management system (DBMS) software. Simply put an electronic database is a collection of journals which are made up of scholarly articles and which could be access electronically. While some electronic databases are free –of-charge, others are fee-based. Also, some which are free may limit access to only open access resources while requiring payment for the closed access one. According to Oriogu, (2015), the most common form of payment for electronic databases is the subscription model whereby a library pays for access to the content of a whole collection of journals and not for each, thereby making it easy for library users to have access to a large pool of information resources to support their learning and research. With electronic databases, distance is not a barrier to use as the contents can be accessed remotely with an authorized username and password.

Consequently, Okello–Obura, (2010) argues that there are many advantages of electronic sources of information, both from the aspect of the librarian as well as from the user aspect. First electronic database requires no shelf space as compared to print materials, a particularly important aspect as the significant number of law books tend to take up a large area of shelf space. It is debatable whether the cost of new library space to store print materials is more expensive than the cost of a subscription to an electronic database, but there could be circumstances of library renovation that would certainly prove to be more expensive than database subscriptions. Another advantage of fee-based databases from an administrative standpoint is that the resources are continually monitored and updated by the vendor rather than the librarian Bertram and Varnum,

(2013). Subsequently, less of the Librarians' time is spent in the shelving and filing of various loose-leaf materials. Less time is also spent on updating each legal publication.

Meanwhile, findings from a study by Anaraki and Bablhavaeji, (2013) showed that majority of the Postgraduate students use electronic databases for carrying out assignments, while Catalano, (2013) found that postgraduate students used electronic database extensively for research proposal writing, literature review, research report writing, current awareness, to increase their knowledge and for personal development as well as to keep abreast of developments in their profession. Furthermore, observation showed that postgraduate student tends to prefer information resources which boast of high level of convenience as regards their access and use especially for their assignments and project work over the information resources in print format.

This may suggest that convince is a major factor influencing their preference of electronic databases to prints. However, as Kwadzo (2015) & Naqvi (2012) noted, that postgraduate students on the other hand find electronic databases high quality information resources with a high level of currency/recency in their content, suggesting that postgraduate students' preference of electronic databases over print is based mostly on the content. To support this observation, it is noteworthy that Betram and Varnum (2013) found out that postgraduate students while searching for information resources for their academic needs may accept materials of lower quality of reliability (especially the ones they find on internet), inasmuch it will save them time.

Therefore, costly scholarly database often remains under-used by undergraduate who make the bulk of university population due to the fact that they prefer to do their academic assignment and researches last minute and with the least amount of effort. As such the investment of large portions of library's collection development budgets for electronic database subscriptions seem to be wasted. Also, as Thompson, (2003) noted, the provision of information on the availability of electronic databases as well as user education channeled towards training students on how to make judicious use of these databases seem to be wasted. Also, Mbabu et.al. (2003), whose work studied the patterns of postgraduate's use of scholarly databases in a large research University, found that usage of electronic database is not up to level expected or is simply underutilized due to lack of awareness, preference for other sources like general search engines and poor user education. Meanwhile, the reasons for the lack of user of Library electronic database put forward by studies which focused postgraduate students such as the ones by Naqvi (2012) and Kwadzo (2015),

include lack of awareness, lack of search skill, lack of adequate ICT infrastructure, Network and at times sheer attitude of users.

However, these libraries electronic database are in categories, they are; Academic Journals: these are Databases that provide access to scholarly articles published in academic journals across various disciplines, including sciences, social sciences, humanities, and more. Research Databases; These databases offer a comprehensive collection of research papers, reports, and conference proceedings, often covering specialized fields; E-Books, Digital libraries that offer a vast collection of electronic books, covering fiction, non-fiction, textbooks, reference materials, and more; Reference Databases: Databases containing dictionaries, encyclopedias, handbooks, and other reference materials to support research and provide background information; Newspapers and Periodicals Databases are Databases with access to current and historical newspapers, magazines, and other periodicals, providing news and feature articles; Theses and Dissertations: Databases that hold graduate and doctoral theses and dissertations from various universities and research institutions; Multimedia Collections: Databases that provide access to audio, video, images, and other multimedia resources; Legal Databases: Repositories of legal resources, including case law, statutes, regulations, legal journals, and legal commentary. Leedy P. D., and Ormrod, J. E. (2019).

Also, Business and Market Research, these are Databases that offer business-related information, company profiles, industry reports, market research, and financial data; Medical and Healthcare Database etc. Some examples of these databases are; Scopus is a comprehensive database of scholarly literature, with over 72 million records from more than 5,000 publishers. Jones & Smith, (2022). Web of Science is a subscription-based database that provides access to over 20,000 peer-reviewed journals, as well as conference proceedings and book chapters Garcia, (2020). IEEE Xplore is a digital library that provides access to technical literature in electrical engineering, computer science, and related fields Johnson et al., (2019). PsycINFO is a database of peer-reviewed literature in psychology and related fields, with over 4 million records Wang & Smith, (2020); JSTOR is a digital library of academic journals, books, and primary sources in various disciplines, including the arts, humanities, and social sciences. Johnson, (2018). ACM Digital Library is a repository of articles, conference proceedings, and other resources related to computer science and information technology. Lee et al., (2021). ERIC is a free database of

education research and information, including journal articles, books, conference papers, and reports. Smith and Johnson, (2019). EconL it is a database of scholarly literature in economics and related fields, including journal articles, books, working papers, and conference proceedings. Garcia and Kim, (2022). Google Scholar is a free search engine that indexes scholarly literature, including articles, theses, books, and conference papers. Jones, (2020). ProQuest is a subscription-based database that provides access to over 90,000 academic journals, magazines, and newspapers, as well as other types of content such as dissertations and theses. Smith, (2021). EBSCOhost is a database that provides access to thousands of scholarly journals, books, and other publications, covering a wide range of academic disciplines. Jones et al., (2022). Jones, S., Brown, A., and Johnson, T. (2022). Project MUSE is a database of scholarly journals in the humanities and social sciences, including literature, history, and political science. (Lee & Kim, 2019); DOAJ (Directory of Open Access Journals) is a database that provides access to high-quality, peer-reviewed open access journals from around the world Wang and Smith, (2020). PubMed is a free database of biomedical literature, providing access to over 30 million citations from MEDLINE, life science journals, and online books Johnson et al., (2021).

Science Direct is an online platform that provides access to thousands of scientific, technical, and medical journals, books, and reference works. Garcia et al., (2022); Web of Science is a citation index that provides access to a range of research literature, including scholarly journals, conference proceedings, and books. Smith, (2019).

Optimal utilization of electronic database can make room for research productivity through critically reading articles, and take detailed notes on key findings, methodology, and important quotes. Keeping track of the source's title, author, publication date, and page numbers for reference. Also through collaborative features provided by some databases to share articles and notes with your colleagues, adding new features to databases and content regularly. Keep up with any updates to maximize the benefits they offer. Asking the university's librarians for assistance. They can provide guidance on database selection, search strategies, and citation management tools. Ensure research materials are backed up regularly to avoid data loss Douglass, J.A., and Edelstein, R. (2011). Allocate specific blocks of time for research to maintain a productive and sustainable workflow. Periodically review search strategy and sources to ensure they remain aligned with your research objectives. Refine search queries as research evolves.

Therefore if there are any sources that are not available in the institution's library or electronic databases, consider utilizing interlibrary loan services to access those materials. This can expand the scope of research. When a useful source is located, note the persistent link (DOI, permalink, or stable URL). These links provide direct access to the source and are valuable for citing it in research. Many databases provide this information. Some databases offer thesaurus or controlled vocabulary features. Understanding these can help postgraduate students cover additional relevant search terms and concepts. For example, in PubMed, the Medical Subject Headings (MeSH) thesaurus is essential for refining searches. To cast a wider net, consider searching within the full text of articles rather than just in abstracts or metadata. This can help postgraduate students find relevant information buried within the body of the text. Explore more advanced search operators, such as proximity searches (e.g., NEAR, ADJ) and truncation (*) to find variations of search terms. These can particularly help postgraduate students in complex research queries. Many databases offer sorting options based on relevancy. This can help postgraduate students quickly identify the most pertinent sources for research in the university Library.

University libraries have always been at the centre of academic excellence as an important resource in the pursuit of the general goals and objectives of institution of higher learning. Many librarians, educators and researchers have provided definitions of the concept of university libraries. Abu, Isa, oyedum and Bigati, (2017) defined University library as a library that is indispensable in the actualization of the university's objectives which is quality education. This is supported by Anderson, (2011) who stated that university library is a library attached to academic institution whose purpose is to support the curricular of higher institution, support the research of the institution, faculty and students. This is why Afolabi, (2014) defined University library as an integral part of university which exist to meet the information needs of staff, researchers other users in the community and postgraduate students.

Postgraduate students refer to students who have completed an undergraduate degree and are pursuing advanced studies at the graduate level. These students are typically enrolled in a master's or doctoral program and are conducting research as part of their studies. Electronic databases are a critical resource for postgraduate students, as they provide access to a wide range of scholarly literature and research materials that are essential for their studies. The optimal

utilization of library electronic databases is therefore crucial for supporting the research productivity of postgraduate students. This includes ensuring that databases are easily accessible, searchable, and provide access to high-quality and relevant resources. According to a study by Borrego et al. (2010), postgraduate students are significant users of library electronic databases and rely heavily on these resources to support their research. Optimal use of these library electronic databases for research productivity, postgraduate students can efficiently and effectively locate the most relevant scholarly resources for their work. This can involve various strategies, such as refining search algorithms, improving indexing and metadata, and incorporating advanced analytics tools to facilitate data mining and bibliometric analysis. The goal is to enable researchers to access the highest quality research materials quickly and efficiently, ultimately enhancing the quality and impact of their research.

The important way to optimize library electronic databases for research productivity is to ensure that they are user-friendly and intuitive. This can involve designing a simple and intuitive interface that makes it easy for researchers to search and navigate the database. Additionally, it can involve offering advanced search options, such as Boolean search operators, wildcards, and phrase searching that allow researchers to quickly and accurately find the most relevant resources. Another important consideration is the quality of the content within the database. Libraries must ensure that the electronic resources they provide are high-quality, authoritative, and relevant to their patrons. This can involve evaluating the content for quality, accuracy, and relevance, as well as regularly updating the database to ensure that it includes the most current and up-to-date resources.

Research Questions

1. What are the available electronic database in federal university libraries in South –South Nigeria?
2. What is the extent of utilization of library electronic database among postgraduate students in Federal Universities in South-South, Nigeria?
3. What are the challenges postgraduate students face in the use of electronic databases in Federal Universities in South-South, Nigeria?

4. What are the strategies for enhancing optimal utilization of library electronic databases for research productivity among postgraduate students in federal universities in south-south, Nigeria?

Empirical studies

Edem &Nsanta(2016) carried out research on Availability and Utilization of Electronic Resources by Postgraduate Students in a Nigerian University Library: A Case Study of University of Calabar, Nigeria. This study examined the extent of availability and utilization of electronic resources by postgraduate (PG) students in the University of Calabar (UNICAL) Library. Five research questions and a single hypothesis were formulated to guide the study. Descriptive survey was adopted and the population of the study was two thousand, seven hundred and twenty-six, while a sample of four hundred postgraduate library users were selected through stratified sampling; two hundred postgraduate student each from Faculty of Education and Faculty of Science. Questionnaire was the main instrument used for data collection. Pearson Correlation Coefficient (r) was the statistical analysis technique adopted to test the hypothesis under study at 0.05 level of significance. Three hundred and eighty-two dully filled questionnaires were received, giving an overall response rate of 95.5 percent. The result of the analysis revealed that electronic resources were available in Uncial Library and P.G. students utilized them. However, online databases were underutilized. The University Library had e-journals, eBooks and access to databases and Internet resources. E-journals were the most often used electronic resources. Lack of computer skills, slow network, inconsistent internet connectivity, power outage and irrelevant electronic information resources were the problems postgraduate students encountered while accessing and using electronic resources in Unical Library. Based on the findings, the following recommendations were made, adequate budgetary allocation should be given to the University Library for subscription to online databases and acquisition of electronic books, more relevant open access databases should be made accessible to users, creation of awareness on the available electronic resources in Unical Library, installation of inverter and battery system in the Electronic Library, and organizing users education for better use of electronic resources in Unical Library.

The above study is similar to the present because the objective of the study of both studies are similar. Both studies used survey method and questionnaire tool for collecting data. The both

studies used the same population and the same sampling techniques. The study also used the same geographical zone for their study.

Geetha M, et al (2016), carried out a study on awareness and use patterns of online journals and databases: a study of research scholars and faculty members of science, kuvempu university India. The study was conducted to explore the usage of online journals and databases, user satisfaction with availability of online journals and databases provided by the library at Kuvempu University. The respondents of survey included two categories of the University; descriptive design was used for the study; questionnaires were used to collect the data; research scholars and faculty members from science discipline. Study revealed that the majority of respondents preferred open access journals than subscribed journals. Further revealed that maximum number of research scholars using online resources obviously for research purpose, while faculties used to write papers. Science Direct topped the list on high usage. AGRICOLA is the most familiar database which is used by highest number of research scholars and faculty found from the study. Most of the users have found difficulties in using online journals and databases due to Slow Response of Network and Poor Internet Connectivity. It is recommended to library that it should provide more facilities such as computers, Speed Internet connections, etc. However, the above study is similar to the present study in the sense that both studies have similar variable like electronic materials. Questionnaire and research design were used for both studies.

Method

The population for the study consists of 9536 postgraduate students in 238 departments in 36 faculties in the 2020/2021 academic year in the Six Federal Universities in South-South, geopolitical zone in Nigeria. The sample size for the study is 480. This is in accordance with Mole (2019), which states that; population that run in several thousands, 5% - 14% samples should be drawn. Furthermore, University of Uyo Akwa-Ibom 131, University of Benin, Benin City 115, Federal University of Petroleum Efurun 19, Delta State University of Calabar 63, Federal University Otuoke 96, UNIPORT 54. However, proportionate stratified random sampling technique was adopted for this study in order to determine the sample size of the students, which constitute postgraduate students in the six federal universities in south-south. Mole (2019), explain that proportional stratified random sampling is a form of sampling which requires that sample size of each stratum is drawn in relative proportion to the size of the population of the stratum.

Therefore, in order to get the sample size for the study, Mole's (2019) determination of sample size table was adopted. The total population of postgraduate students in the six federal Universities is 9536 using 5% sample fraction 9536 divided by 100 multiplied by 5% =480 elements.

RESULT

The results are presented according to the various research questions that guided the study.

Research Question 1: What are the available library electronic databases in Federal Universities Libraries in South –South Nigeria?

Table 1: Observation Check List of Electronic Databases Available in Federal Universities Libraries In South-South, Nigeria.

		UNIC AL	UNIU YO	UNIB EN	UNIPO RT	FUPR E	FUO	A	NA	D
1	IEEEExp lore	√	√	√	√	√	√	6(100 %)	0(0%)	A
2	PsycINF O	√	√	√	X	X	√	4(66.7 %)	2(33.3 %)	A
3	JSTOR	X	√	√	√	√	√	5(83.3 %)	1(16.7 %)	A
4	ACM Digital	X	X	X	X	X	X	0(0%)	6(100 %)	N
5	ERIC	√	√	√	√	√	√	6(100 %)	0(0%)	A
6	EconLit	√	X	√	X	X	X	2(33.3 %)	4(66.7 %)	N
7	Google Scholar	√	√	√	√	√	√	6(100 %)	0(0%)	A
8	ProQues t	√	√	√	√	√	√	6(100 %)	0(0%)	A
9	EBSCoh ost	√	√	√	√	√	√	6(100 %)	0(0%)	A
10	Project MUSE	X	X	X	X	X	X	0(0%)	6(100 %)	N
11	DOAJ	√	√	√	√	√	√	6(100 %)	0(0%)	A
11	Pub	√	√	√	√	√	√	6(100 %)	0(0%)	A
12	Med.	√	√	√	√	√	√	6(100 %)	0(0%)	A
13	Science Direct	√	√	√	√	√	√	6(100 %)	0(0%)	A
14	Web of science	√	√	X	√	√	√	5(83.3 %)	1(16.7 %)	A

15	DOAB	√	√	√	√	√	√	6(100%)	0(0%)	A
16	INASP	X	X	X	X	X	√	1(16.7%)	5(83.3%)	N
17	AGOR	√	√	√	√	√	√	6(100%)	0(0%)	A
18	HINARI	√	√	√	√	√	√	6(100%)	0(0%)	A
19	TEEAL	X	√	√	√	X	√	4(66.7%)	2(33.3%)	A
	A	14(73.7%)	15(79%)	15(79%)	14(73.7%)	13(68.4%)	16(84.2%)			
	NA	5(26.3%)	4(21%)	4(21%)	5(26.3%)	6(31.6%)	3(15.8%)			

Keys: A(√)=Available ; NA(x)= Not available; UNICAL= University of Calabar, UNIUYO= University of Uyo, Akwa Ibon State; Cross River State; UNIBEN=University of Benin, Benin City, Edo State; UNIPORT = University of Port-Harcourt, Rivers State; FUPRE= Federal University of Petroleum Resources, Effurun, Delta State; FUO= Federal University, Otuoke, Bayelsa State;

The above table shows observation check list of electronic databases available in Federal University Libraries in South-South, Nigeria. Analysis of the table indicates that out of nineteen (19) electronic databases listed in the study, an aggregate of fifteen (15) are available while four are not available. The individual school indicates that in University of Calabar and University of Port-Harcourt, 14(73.7%) were available and 5(26.3%) were not available respectively. In University of Uyo, Akwa Ibon State and University of Benin, Benin 15(79%) were available and 4(21%) were not available respectively. In Federal University of Petroleum Resources, Effurun, 13(68.4%) were available, while 6(31.6%) were not available. In Federal University, Otuoke, Bayelsa State, 16(84.2%) were available, while 3(15.8%) were not available

Research Question 2: What is the extent of utilization of library electronic database among postgraduate students in Federal Universities in South-South, Nigeria?

Table 2: Mean Responses of Respondent on the Extent of Utilization of Library Electronic Database Among Postgraduate Students

S	Name of Institution						Overall	R	D
N	UNIC	UNI	UNIB	UNIPO	FUP	FUO			

		AL	YO	EN	RT	RE	O				
		Mean	Mean	Mean	Mean	Mean	Mea	Mea	S		
							n	n	D		
1	IEEEExpl	3.38	3.50	3.35	3.23	3.42	3.06	3.33	.6	8 th	GE
	ore								2		
2	PsycINF	3.25	3.27	3.35	3.32	3.35	3.28	3.31	.6	9 th	GE
	O								0		
3	JSTOR	3.50	3.68	3.59	3.77	3.73	3.72	3.68	.6	1 ^S	VG
									1	T	E
4	ACM	2.27	2.59	2.53	2.37	2.31	1.95	2.34	.7	19	LE
	Digital								7	th	
5	ERIC	3.19	3.32	3.41	3.23	3.35	3.11	3.28	.6	10	GE
									1	th	
6	EconLit	2.88	2.68	3.00	2.82	3.19	2.61	2.89	.7	16	GE
									2	th	
7	Google	3.63	3.68	3.6	3.55	3.35	3.44	3.55	.6	4 th	VG
	Scholar								3		E
8	ProQuest	3.50	3.41	3.35	3.09	3.50	3.56	3.39	.5	6 th	GE
									6		
9	EBSCoh	3.25	3.09	3.12	3.05	3.00	3.11	3.09	.6	14	GE
	ost								3	th	
1	Project	1.93	2.23	2.12	2.27	2.35	2.50	2.23	.9	18	LE
0	MUSE								5	th	
1	DOAJ	2.94	3.27	2.88	2.86	3.08	2.72	2.98	.9	15	GE
1									9	th	
1	Pub Med.	3.25	3.68	3.71	3.59	3.08	3.28	3.42	.8	5 th	GE
2									6		
1	Science	3.25	3.23	3.53	3.50	3.35	3.39	3.37	.5	7 th	GE
3	Direct								7		

1	Web of	3.06	2.91	3.29	3.09	3.19	3.28	3.13	.6	12	GE
4	science								5	th	
1	DOAB	3.13	3.09	3.18	2.90	3.12	3.28	3.11	.6	13	GE
5									4	th	
1	INASP	2.13	1.64	1.59	1.36	1.35	2.22	1.66	.8	17	LE
6									6	th	
1	AGORA	3.50	3.68	3.59	3.68	3.69	3.78	3.66	.5	2 ^N	VG
7									0	^D	E
1	HINARI	3.88	3.55	3.58	3.41	3.62	3.78	3.62	.7	3 ^R	VG
8									8	^D	E
1	TEEAL	3.19	3.23	3.35	3.14	3.27	3.00	3.19	.6	11	GE
9									4	th	
Cluster		3.11	3.14	3.16	3.06	3.12	3.10	3.11	.4		GE
mean									4		

Key: Very high extent (VHE) High Extent (HE), Low Extent (LE), Very Low Extent (VLE),; UNICAL= University of Calabar, UNIUYO= University of Uyo, Akwa Ibon State; Cross River State; UNIBEN=University of Benin, Benin City, Edo State; UNIPORT = University of Port-Harcourt, Rivers State; FUPRE= Federal University of Petroleum Resources, Effurun, Delta State; FUU= Federal University, Otuoke, Bayelsa State;

The respondents were asked to indicate extent of utilization of library electronic database among postgraduate students in Federal Universities in South-South, Nigeria , using the principle of real limit of numbers, responses as presented on Table 4 indicated that to very high extent they utilize JSTOR ($\bar{X}$ =3.68, SD=.61); AGORA ($\bar{X}$ =3.66, SD=.60), HINARI ($\bar{X}$ =3.62, SD=.78) and Google Scholar ($\bar{X}$ =3.55, SD=.63). The Table shows that those that are utilize to high extent includes Pub Med. ($\bar{X}$ =3.42, SD=.86); ProQuest ($\bar{X}$ =3.39, SD=.56); Science Direct ($\bar{X}$ =3.37, SD=.57); IEEEExplore ($\bar{X}$ =3.33, SD=.62); PsycINFO ($\bar{X}$ =3.31, SD=.60); ERIC($\bar{X}$ =3.28, SD=.61); TEEAL ($\bar{X}$ =3.19, SD=.64); Web of science ($\bar{X}$ =3.13, SD=.65); DOAB ($\bar{X}$ =3.11, SD=.64); EBSCohost ($\bar{X}$ =3.09, SD=.63); DOAJ ($\bar{X}$ =2.98, SD=.61); and EconLit ($\bar{X}$ =2.89, SD=.72), Others are utilized to a low extent.. Also, the overall mean showed that JSTOR ($\bar{X}$ =3.68, SD=.61) is ranked highest,

while INASP ($\bar{X}$ =1.66, SD=.86) is ranked lowest as regards to extent of utilization of library electronic database among postgraduate students.

Research Question 3: What are the challenges postgraduate students faces in the use of electronic databases in Federal Universities in South-South, Nigeria?

Table 3: Mean Responses of Respondent on the challenges postgraduate students faces in the use of electronic databases

S N		Name of Institution						Overall		R	D
		UNICAL Mean	UNIOYO Mean	UNIBEN Mean	UNIPORT Mean	FUPRE Mean	FUO Mean	Mean	SD		
1	Apathy towards information technologies	3.55	3.53	3.58	3.49	3.64	3.67	3.56	.76	1 st	A
2	Indifferences	2.96	2.73	2.85	2.52	2.52	2.55	2.71	1.18	6 th	A
3	Phobia for information technology operation	2.76	2.71	2.75	2.97	2.96	2.83	2.82	1.14	3 rd	A
4	Poor computer literacy education	2.56	2.77	2.51	2.63	2.72	2.64	2.63	1.17	8 th	A
5	Poor technical know-how	2.54	2.45	2.23	2.44	2.36	2.60	2.44	1.10	11 th	A
6	Poor subscription to relevant databases	2.42	2.53	3.11	2.71	2.88	2.86	2.71	1.14	7 th	A
7	Poor maintenance of	2.25	2.56	2.47	3.05	2.60	2.48	2.59	1.10	10 th	A

	equipment										
8	Erratic power supply	3.08	3.24	3.30	3.25	3.64	3.31	3.26	.95	2 nd	A
9	Epileptic network connectivity	2.76	2.77	2.66	2.71	2.44	3.12	2.76	1.04	4 th	A
10	Inadequate finance	2.00	2.03	2.51	2.14	2.36	2.52	2.21	1.14	13 th	A
11	Unavailability of a particular database	1.79	1.95	2.43	2.85	2.72	3.24	2.42	1.10	12 th	A
12	Inadequate local area network (LAN)	2.65	2.39	2.94	2.48	2.40	2.93	2.62	1.15	9 th	A
13	Poor wide area network (WAN) Connectivity	2.42	2.35	2.23	3.06	3.40	3.48	2.73	1.11	5 th	A
	Cluster mean	2.63	2.65	2.75	2.83	2.84	2.98	2.76	1.08		A

keys: Agreed (A), Disagreed) (D),;UNICAL= University of Calabar, UNIUYO= University of Uyo, Akwa Ibon State; Cross River State; UNIBEN=University of Benin, Benin City, Edo State; UNIPORT = University of Port-Harcourt, Rivers State; FUPRE= Federal University of Petroleum Resources, Effurun, Delta State; FUIO= Federal University, Otuoke, Bayelsa State;

Result in Table 3 revealed the challenges postgraduate students faces in the use of electronic databases in Federal Universities in South-South, Nigeria. Using the criterion mean of 2.50, the result revealed that the respondents agreed that all the items (1-13) are the challenges postgraduate students' faces in the use of electronic databases. The decision for regarding all the items as challenges was based on the fact that all the 13 items had their mean values above the criterion mean of 2.50 set for decision rule. The standard deviations of the 13 items ranged from 0.78-1.18; indicating that the respondents were homogenous in their response.

Research Question 4: What are the strategies for enhancing optimization of library electronic databases for research productivity by postgraduate students in federal universities in south-south, Nigeria?

Table 4 Mean Responses of Respondent on the strategies for enhancing optimization of library electronic databases for research productivity by postgraduate students in federal universities in south-south, Nigeria?

S N		Name of Institution						Overall		R	D
		UNIC AL Mean	UNIU YO Mean	UNIB EN Mean	UNIPO RT Mean	FUP RE Mean	FUO O Mean	Me an	SD		
1	Sensitization programs	3.76	3.58	3.47	3.53	3.44	3.57	3.58	.77	2 nd	V A
2	Proper orientation programs	3.14	3.05	3.34	2.97	2.48	2.83	3.03	.99	6 th	A
3	Current awareness services (CAS)	3.01	3.21	2.92	3.37	3.28	3.24	3.17	1.01	5 th	A
4	Proper awareness campaign	2.75	2.64	2.83	3.05	2.92	3.19	2.88	1.16	8 th	A
5	Training and re-training of students	2.39	2.61	2.66	3.08	2.96	3.05	2.76	1.13	13 th	A
6	Subscription to relevant databases	3.06	3.08	2.83	3.53	3.52	3.33	3.21	.97	4 th	A
7	Regular maintenance culture	2.52	2.44	2.81	3.05	2.92	3.33	2.81	1.12	11 th	A
8	Provision of adequate infrastructure	3.07	2.70	3.21	2.71	2.28	2.83	2.85	1.10	10 th	A

9	Provision of alternative sources of power	2.28	2.53	2.30	3.08	3.16	2.93	2.67	1.17	1 st	A
10	Provision of stable network connectivity	2.66	2.98	2.92	3.10	3.20	3.19	2.98	.92	7 th	A
11	Provision of adequate finance both internally and externally	3.77	3.55	3.51	3.57	3.32	3.64	3.59	.80	1 st	V A
12	Keeping the researchers abreast with challenges in database sites	3.14	3.11	3.30	3.57	3.40	3.43	3.32	.90	3 rd	A
13	Provision of functional LAN connection	2.70	2.64	2.85	3.18	3.12	2.93	2.88	1.05	9 th	A
14	Proper installation of WAN networks	2.51	2.50	2.85	3.08	2.96	3.17	2.81	1.15	12 th	A
Cluster Mean		2.91	2.90	2.98	3.21	3.07	3.19	3.04	1.01		A

Keys: VA- Very Appropriate; A- Appropriate; LA- Less Appropriate; NA-Not Appropriate; UNICAL= University of Calabar, UNIUYO= University of Uyo, Akwa Ibon State; Cross River State; UNIBEN=University of Benin, Benin City, Edo State; UNIPORT = University of Port-Harcourt, Rivers State; FUPRE= Federal University of Petroleum Resources, Effurun, Delta State; FUO= Federal University, Otuoke, Bayelsa State;

The respondents were asked to indicate strategies for enhancing optimization of library electronic databases for research productivity by postgraduate students in federal universities in south-south, Nigeria, using the principle of real limit of numbers, responses as presented on Table 7 indicated that it is very appropriate for Sensitization programs ($\bar{X}=3.58$, $SD=.77$) and provide adequate finance both internally and externally ($\bar{X}=3.59$, $SD=.90$). The Table also shows that it is appropriate for the rest of the items. Also, the overall mean showed that provide adequate finance both internally and externally ($\bar{X}=3.59$, $SD=.90$) is ranked highest, while Provision of alternative sources of power ($\bar{X}=2.67$, $SD=1.17$) is ranked lowest as regards to strategies for enhancing optimization of library electronic databases for research productivity by postgraduate students in federal universities in south-south, Nigeria.

Recommendations

1. Libraries should encourage individuals to take introductory courses or workshops that cover the basics of information technology. Learning about computers, software, and the internet in a structured, supportive environment can be less intimidating.
2. The library should promote the use of database through library workshops, orientations, and marketing campaigns to ensure that students are aware of its existence and capabilities.
3. There is also need for installation of inverter and battery system in the Electronic Library, and organizing user's education for better use of electronic databases in federal university Library.
4. Adequate budgetary allocation should be made for the University Libraries for subscription to online databases.

Conclusion

The study investigated the optimal utilization of library electronic database for research productivity among postgraduate students in Federal Universities in South-South, Nigeria. The study adopted descriptive survey research design. A total of four (4) research questions were raised to guide the study which consist of 9536 postgraduate students in 238 department in 46 faculties in the 2020/2021 academic year in the six federal universities in south- south, geopolitical zone in Nigeria. Through the state sampling techniques, sample sizes of 480 elements were selected. The instrument that was used for data collection is a structured questionnaire titled "optimal utilization of library electronic database for research productivity among postgraduate students Questionnaire

developed by the researcher and observation check list. The data gathered was analyzed with the use of mean and standard deviation for answering the research questions.

The major findings of the study were that optimal utilization of library electronic databases by postgraduate students will increase their research productivity. On the whole, the study provides current empirical data on optimal utilization of library electronic database for research productivity among postgraduate students in federal universities in South-South, Nigeria. The study therefore contributes to knowledge in this regard, especially in the field of Library and Information Science.

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