

Assessing the Usage of Electronic Information Resources and the Nature of Research Output by Postgraduate Students in Federal University Libraries in South-East, Nigeria

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Abstract

This research work was designed to assess the usage of Electronic Information Resource (EIRs) and nature of research output among postgraduate students in federal university libraries in South-East, Nigeria. The population of the study consists of 1,522 registered postgraduate students in the university libraries from the five federal universities in South-East, Nigeria. The objectives of the study are to determine the types of EIRs used by postgraduate students for research output and to find out the nature of research output produced by PG students in universities in South-East Nigeria. The study adopted a description survey designs. Multi-stage sampling method was used to select four hundred and twenty-one (421) postgraduate students that formed the sample size for the study. The instrument for data collection was questionnaire. The data collected from questionnaires distributed and returned were analyzed using Mean (\bar{X}) and Standard Deviation (SD). The result of the findings indicated that the nature of research output carried out by postgraduate students in federal university libraries in South-East, Nigeria are, conference papers, workshop papers, and seminar papers; conference proceedings, book publications, undergraduate projects among others. Types of Electronic information resources used by these students for research included CD-ROM, Online Public Access Catalogue, electronic books, electronic thesis/ dissertation, electronic journals and internet. The study recommends that university management should make it compulsory for every postgraduate to publish one online journal, chapter of book and a conference paper in a proceeding before graduation to increase the nature and type of research produced and used by postgraduates. Also, university libraries should invest more on the acquisition of e-resources to enhance quality research output.

Key Words: Electronic Information Resources, Research, Research Output, Postgraduate Students,

Introduction

The use of Electronic Information Resources (EIRs) enhance the quality of research productivity of students. This is because information available in EIRs are usually current, useful and less expensive than the printed media. Electronic resources have revolutionized research process and created access to information in related fields.

Electronic information resources appear in different nature which includes; Online public access catalogue (OPAC), CD ROM, electronic mails, internet, online databases, databases, e-journals, e-books, networks, search engines, e-thesis. These resources are made available by the university libraries, to cater for the research and academic needs of the community as a whole. Postgraduate students as part of the university community should have access to these electronic resources, to meet their information needs. The university libraries provide information which is fundamental to any meaningful research. Graaf, (2023) recognised the role of the university library in research and stressed that libraries are hubs with close contacts with researchers. Librarians do understand the research process, the research reward system and are good in community building. This makes them able to team up with the researchers. In view of that German Science and Humanities Council (2022) opined that libraries possess extensive knowledge and often capacities to actively support researchers in their publication. In supporting researchers, the university libraries are saddled with the responsibility of providing prints and electronic information resources to these researchers.

Electronic resource is an electronic information resource which can be accessed from anywhere, anytime and it breaks the barrier of time and physical boundary (Gautam & Sinha, 2017). The electronic information resources include electronic-books, e-journals, e-databases, academic web resources official document, etc. These resources are accessible, 24x7 for the interested library users. Adeleke and Nwalo, (2017) declared that availability of e-resources have solved storage problem because of its ability to store information electronically, removing the risk of loss and the cost of replacement instantly reduced. They stressed further that e-resources have enabled users to receive information when needed “just in time and not just in case”. The impact of electronic resources across the globe is overwhelming, university libraries in Europe and America employ their services to function optimally. Sumit, et. al., (2015) indicated that library users of Assam University, Silchar in India were satisfied with electronic resources because of its availability and accessibility. They used both electronic resources and printed resources for their academic and research output. However, their level of usage was low; the low usage was as a result of network failure, the limited number of the computers. Other problems they encountered are slow bandwidth, power and lack of knowledge of these resources. Similarly, a research on the purpose of using electronic resources by librarians of Srilankan Universities had six options provided for them namely; use of electronic resources were for teaching, for their own postgraduate research, to support all type of research, to write professional material like books and articles, to supervise research and to keep up to date. The result of the investigation established that, the electronic resources were mainly used for research purposes; followed by postgraduate studies, and teaching. Their usage for writing professional material and to keep up to date had low responses Wijetunge, 2017). Also Waller, (2013) indicated that Texas Senate passed a bill known as Senate bill 6 demanding the use of electronic instructional materials such as electronic textbooks in schools and creation of a new centre known as Digital Promise. Digital promise permits the

educators to use technology to improve their teaching and that student should enjoy the benefits that accrue from it. The advantages are improved access, solved the storage problem, contain current information because it is easily updated, environmentally friendly; can be printed into hard copy. Although, some disadvantages encountered by the student included limited access, lack of access, eye strain, lack of exposure and training. Zhang, et. al.,(2011) reported that universities in Wuhan, China use electronic resources for research, teaching and self-development, users demand is highest in March because of good climatic condition needed for their literature and paper writing. August normally records low usage because of hottest season, the use of electronic resources is affected by the weather. Akuffo and Budu, (2019) carried out a study on use of electronic resources by students in a premier postgraduate theological university in Ghana. their Major findings included; high awareness levels, proficiency in the use of a computer, respondents used e-resources for academic purposes. However, the study noted access problems, search and retrieval problems and staff-related problems as the challenges militating against postgraduate students' use of EIRs.

Postgraduate students that use these EIRs are grouped into three according to their programmes; Postgraduate Diploma (PGD), Masters, MPhil and Doctor of Philosophy (PhD). A huge part of postgraduate study revolves around independent research. Independent research is enhanced by the availability and use of current information materials in prints and non-print formats.

Initially, postgraduate research in the university was characterized by the use of print media as sources of information (Okite-Amughoro et. al., 2014). Nowadays, the intervention of information technology has brought a paradigm shift in the way and manner information for scholarly research is accessed and disseminated (Ndinoshiho, 2010). The existence of information in electronic media has given unlimited access to data that is needed for PG students to find relevant information to increase the quality of their research. Abubakar,et. al., (2017) noted that research entails an organized way of identifying a need for information, collecting and authenticating that information, analysing the data and finally make a recommendation on the way forward. Some of the characteristics of research includes; it must be systematic, empirical, theoretical, cumulative, non- ethical and verifiable in nature. Systematic means that findings must follow some stipulated order to get a valid result. Empirical indicates that conclusions are not based on the researcher's views or opinions but on data collection and relied on observation. Theoretical means that it must explain some theories in the field of study and reveal the relationships between variables. It must be related to a theory. Cumulative declare that everyone should be built based on existing facts, in order word, it should be established on existing ones, or it should be capable of adding new things on existing ones. Non-ethical, it must give an answer to any action. Verifiable reveals that results obtained at the end of the research must be verified by other experts in the field, the conclusion must be out in the open place for criticisms.

Universities all over the world evaluate the strength of each academician by the number of publications output. Research output is the quantum of works produced by

an individual at a particular time. It could emanate from the journal articles, book publication, and chapters in books, technical reports, conference papers, seminar papers, edited works, workshop papers, thesis, and other types of publications (Ifideh et. al., 2018). Research output is used interchangeably with research productivity

Postgraduate students are required to present a standard research work (thesis/dissertation) for the award of their final degrees (Abubakar and Adetimirin, 2015). Mulinge and Arasa, (2013) reported that postgraduate training is embedded in research, dissertations and thesis must be under close monitoring in order to get an excellent work. They explained that the quality of PG research is important for long term economic and social progress, they affirmed that poor quality dissertations and thesis shows that universities are raising researchers who are ill-equipped and not able to discharge their roles and mentor other researchers. They categorised the factors that impede the quality of PG research into three; institutional policy, program policies and practices that have to do with the quality of training environment where PG research is done, learners centre factor which means that the quality of student admitted has a correlation with the quality of PG research, student whose background is poor will struggle throughout the whole training. Supervision policy which connotes that attitude of the supervisor will determine the timely completion of the research, although both parties have a role to play. Research has been made possible in this era of information explosion; information that is provided through e-resources is current and needed for research productivity.

The major role of electronic information resources (EIRs) is the ability to make information accessible to researchers in a more convenient way. Researchers can gain access to information that is timely anytime, anywhere, to broaden their knowledge in their respective fields. Information, which is the bedrock to the success of any research, can be made available and accessible through electronic resources. EIRs have provided an avenue for students to download, process and disseminate information in their different fields. Information is no longer restricted to four walls of the library building, but it is available and accessible anytime and anywhere.

Statement of the Problem

Advancement in technologies has brought about change in the format and type of information resources provided by the university libraries to improve on teaching, learning and research processes in Nigerian University education. University libraries now provide information resources in an electronic format to aid research and studies. Electronic resources are invaluable research tools for postgraduate students. However, some of the available literature on the use of e- resources by postgraduate students have shown, poor funding, inadequate training, high cost of access, restrictions; inadequate power supply, information overload, and lack of subscription by the library were identified as key factors militating against the utilisation of electronic information resources (Adenariwo, 2022; Mole & Edewor 2021 & Sambo, et. al., 2022). Despite the challenges encountered by these postgraduate students electronic resources are

providing current and relevant information for research and studies. E-resources have enabled university Libraries to provide information resources to postgraduate 24 hours daily irrespective of their location with the help of internet connected devices. Regrettably it has been observed that the utilisation of these e-resources in the university libraries by postgraduate students in Nigeria for research output is low compared to their counterparts in developed countries. (Owolabi, et al., 2016 & Dukper, et. al., 2018). This negative attitude, if not checked urgently by library management by creating awareness and training on the use and benefits of e-resources in research, might affect the quality and quantity of research produced by PG students. The long-term effect is that they will not be able to compete with their counterparts globally since the quality of the information available will determine the quality of research output. So many articles, journals both locally and international have been written on the subject matter, but to the best of the researcher's knowledge through literature search and within the context of this research, no study has been carried out on postgraduate students in the federal University libraries in South-East Nigeria. It is against this backdrop that the study intends to “Assess the nature of research output and the type of electronic information resources used by postgraduate students in federal university libraries in south-east, Nigeria”.

Purpose of the Study

This study aims at examining electronic information resource use pattern as a correlate of research output among postgraduate students in federal university libraries in South-East Nigeria. Specifically, the study was designed to:

1. determine the types of EIRs used by postgraduate students for research output
2. determine the nature of research output produce by PG students in universities in South-East Nigeria

Research Questions

1. What are the types of EIRs used by postgraduate students for research output
2. What are the nature of research output produce by PG students in universities in South-East Nigeria

Review of Related Literature

Nature of Research Output by Postgraduate Students in University Libraries

Electronic resources which are an offshoot of information communication technology (ICT) are defined as the resources in electronic format which can be accessed through computer technology or through the internet (Iroaganachi & Izuagbe, 2017). The result of study carried out by Gautam & Sinha, (2017) with research scholars and faculty members of university of Allahabad, Uttar Pradesh, India on the use of electronic resources indicated that the majority of the research scholars use the electronic resources for career development while the faculty members use the electronic resources to get more information pertaining to current developments in subject field.

Ramana as cited in Mkolo, (2019) stated that majority of postgraduate students; irrespective of their field of study prefer to use electronic journals in writing project reports and references research activities. Omotesho as cited in Tella & Onyancha,(2021) outlined some of the research outputs that are published in books, journal, articles, edited conference proceedings, technical reports, creative writing and a chapter of a book. Also, result of the finding on the format or outlet the research students have published their scholarly works in chapters of books, conference proceedings, seminars/workshops, and journals. The result shows that the students find it difficult to publish in journal compared to out format of research output (Tella & Onyancha, 2021).

Universities all over the world evaluate the strength of each academic by the number of publications output. Studies have shown that academics that devote themselves in reading stand the chance to publish more than their counterparts who do not, reading books and journal have a link with research productivity. Everinmene and Eze, (2021) who recorded that e-thesis/dissertation boost the ranking of universities, increase their visibility and enable students save their research works/output

Academics who read a lot of books and journals will have optimum research productivity (Kalaiapan and Rajasekar, 2017). Research output is the quantum of works produced by an individual at a particular time. It could emanate from the journal articles, book publication, and chapters in books, technical reports, conference papers, seminar papers, edited works, workshop papers, thesis, and other types of publications (Ifideh et. al., 2018). Research output is used interchangeably with research productivity. Postgraduate students are required to present a standard research work (thesis/dissertation) for the award of their final degrees (Abubakar and Adetimirin, 2015). University of Southern Queen (2022) started that research output can take many forms such as research book, chapters in research book, journal articles, conference publications, live performance of creative works, recorded/rendered creative works, research reports and portfolio.

Mulinge and Arasa, (2013) reported that postgraduate training is embedded in research, dissertations and thesis, so it must be under close monitoring in order to get excellent work. They explained that the quality of PG research is important for long term economic and social progress, they affirmed that poor quality dissertations and thesis shows that universities are raising researchers who are ill-equipped and not able to discharge their roles and mentor other researchers. Also, Muhammad, (2021) categorised those factors hinder research output into three; supervisors, personal and institutional factors. He maintained that to achieve quality research the supervisors should be more advanced in knowledge than the students being supervised. Personal factors imply that the student should be competent and efficient in carrying out an assignment. Institutional factors imply that; the institution where the research is being carried out should be critical with the following, sufficient access to research materials, financial assistance, internet access, library facilities and resources should be considered. To cope with these efficiently, university libraries should be well stocked

with institutional materials of different kinds to guide these postgraduate students. Desmennu and Owoaje, (2018) observed that doctoral research has a serious effect on the nation's research output which invariably impacts the community. Although they identified some factors that militate against research productivity to include inadequate funding, inability to write good proposals to attract grants, type of research environment and good supervision.

Types of Electronic Information Resources Used for Research Output

The types of research carried out by postgraduate students include thesis/dissertation, journal articles, conference paper, and seminar among others. Electronic Thesis/dissertation according to Everinmene and Eze, (2021) are the online versions of postgraduate research output. They are thesis/dissertations stored in digital format, accessible via the internet. Several thesis and dissertations produced by PG students have been converted into electronic media, access to these resources have been made possible through the institutional repositories called uniform commercial code. Researchers have indicated that information provided by ETD is very useful and informative for further research (Mittal and Bala 2013). Akinola, et. al., (2020) stated that e-journal is an important source of information that is commonly used by postgraduate students. They explained that researchers preferred e-journal more than print because of its better quality and greater access to more materials.

Padamma(2017) carried out a survey on the use of e-resources by students of MBA and MCOM departments in Kuvempu University. The study revealed that respondents were pleased with the use of e-resources because the library staff were willing to offer the needed help. Their awareness level was high as they used these resources regularly; types of e-resources mostly consulted were e-journal and e-newspaper that carry current information in their fields. Search engines often consulted were Google and Yahoo.

Tella and Oso, (2019) conducted a Comparative analysis of Card and Online Public Access Catalogue (OPAC) preference among students in selected Nigerian universities. The outcome of the research indicated that the respondents still use the traditional card catalogue more than OPAC. They attributed their reason to lack of proper orientation. Likewise, Madondo, et. al., (2017) stated that African university library Jomoko, Yamech made several efforts to procure e-resources, providing access to these resources and information literacy trainings, but despite all these, practical use does not justify the amount spent in purchasing those resources. In all the e-resources, the internet were mostly used, seconded by CD-ROM and e-abstracts, some of the resources were rated never used by majority of the respondents. In agreement Bankole,et. al., (2015) in their studies revealed that the respondents were frequent users of e-resources, types of e-resources used were Internet, search engines, e-lecture notes and e-books, for class assignment and to be well informed in the latest developments in their various disciplines. The study noted that the respondents were satisfied with

library e-resources since access can be made from any location. A research carried out by Uwandu, (2022) revealed that e-journals, e-books, e-newspapers, e-conference proceedings, Online Public Access Catalogue (OPAC), CD-ROM databases, e-magazines, electronic databases, online databases, e-theses and dissertations and Internet resources are the types of electronic information resources available for use by postgraduate students in the IMO state university, OWERRI library studied.

Methodology

This study adopted a descriptive survey, the population for the study are the postgraduate students drawn from five federal universities from five states that make up the South-East geopolitical zones of Nigeria using a multi-stage sampling technique. One Federal University was selected from each of the five states that make up the South-East geopolitical zones of Nigeria. The universities are, Anambra State-Nnamdi Azikiwe University, Awka (UNIZIK, 423); Enugu state-University of Nigeria Nsukka (UNN 706), Abia State-Michael Okpara University, Umudike (118); from Imo state, Federal University of Technology Owerri (FUTO, 178); and Ebonyi state-Alex Ekwueme Federal University Ndufu – Alike (43). The number of registered PG students in five universities in 2017/2018 academic year amounted to 1,522 users. Taro Yamane formula for Population $n = \frac{N}{1+(Ne^2)}$ in Uzoagulu (2011) was used in calculating the sample size for each stratum in order to have proportional representation. A sample size of 421 postgraduate students were selected as follows UNIZIK (114), UNN (128), Michael Okpara University Umudike (62), Alex Ekwueme Federal University Ndufu-Alike Ebonyi (34), and FUTO (83). Instrument for data collection was questionnaire on the types of EIRs used by postgraduate students for research output in university libraries in South-East, Nigeria, with 20 items while the second cluster was on the nature of research output carried out by postgraduate students in university libraries in South-East, Nigeria, with 11 items. The questionnaire was constructed on a four-point rating scale of, Strongly Agree (SA)/ Agree (A)/ Disagree (D)/ Strongly Disagree (SD) by the researcher to illicit information from postgraduate students, A total number of 421 copies of questionnaire were administered to five federal university libraries under study. Out of 421 copies of questionnaires that were distributed 376 (89%) copies were returned and found useful for the study.

Data Analysis

The results of this study are presented according to the research questions. Out of 421 copies of questionnaires that were distributed 376 (89%) copies were returned and found useful for the study. The data were organised in tables according to research questions, standard deviation (SD) and Mean (X) scores. The Statistical Package for Social Science (SPSS) was used in analysing the data collected from the respondents. Analyses values were assigned to the four response categories' and the mean was interpreted in line with the 4- point scale ranging from (4) highest to (1) the lowest. In decision making the lower limit of the high degree response category, which was 2.50

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was used as cut off. Any item with a mean score response of 2.50 and above was accepted as an influencing factor.

Table 1: Mean and standard deviation of respondents on the nature of research output produce by postgraduate students in university libraries in South-East, Nigeria

Table 1: Mean and standard deviation of respondents on the types of EIRs used by postgraduate students for research output in university libraries in South-East, Nigeria

Item Statement	UNIZIK		UNN		Michael Okpara		FUNAI		FUTO		Overall Mean		Rank	Remark
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
CD-ROM	3.09	.97	3.16	.77	3.12	.96	3.23	.80	2.33	.76	2.96	.91	13 th	Agree
Online Public Access catalogue (OPAC)	3.22	.95	3.05	1.00	3.35	.95	2.97	.91	2.99	1.04	3.12	.99	5 th	Agree
Electronic Books	3.06	.80	3.15	.88	3.21	.80	3.00	.89	2.99	.99	3.09	.87	7 th	Agree
Electronic Journals	3.27	.94	3.30	.88	3.00	.78	3.42	.81	3.20	.91	3.24	.89	1 st	Agree
Electronic Thesis/Dissertation	2.45	.72	3.07	.92	2.96	1.05	2.90	1.01	3.01	.81	2.86	.91	15 th	Agree
Internet	3.01	1.06	3.08	1.00	3.23	.91	3.00	.97	2.97	1.06	3.06	1.01	9 th	Agree
Electronic Newspaper	3.02	.97	2.85	.96	3.09	.93	3.16	.82	3.20	.83	3.03	.93	10 th	Agree
Electronic Magazines	3.20	.95	3.05	1.06	3.12	.76	2.65	.95	3.33	.87	3.13	.96	4 th	Agree
Electronic mail	3.04	.81	3.12	.82	3.02	1.03	3.19	.83	2.64	.90	2.99	.88	14 th	Agree
Electronic Encyclopaedia	3.29	.92	2.90	1.14	2.84	1.01	2.58	.85	2.93	1.01	2.98	1.03	12 th	Agree
Abstracts and Review	2.41	.69	2.99	.95	3.30	.76	3.13	.85	3.36	.86	2.96	.90	11 th	Agree
Electronic Seminars/Conference	3.00	1.00	3.16	.96	3.18	.93	2.97	1.05	3.11	.95	3.09	.97	7 th	Agree
Institutional Repository	3.38	.83	3.09	.85	2.96	.91	3.00	.93	3.04	.90	3.13	.88	4 th	Agree
World wide web	3.03	1.03	3.13	.95	3.12	.80	3.23	.76	3.03	1.10	3.09	.97	7 th	Agree
Sound recording	3.06	.96	3.08	.94	3.05	.85	3.06	.96	3.13	.82	3.08	.91	8 th	Agree
Multi – media resources	3.22	.95	3.12	1.01	3.04	.87	2.87	1.06	3.36	.86	3.16	.96	3 rd	Agree
Electronic archives	3.04	.81	3.27	.81	3.07	.96	3.19	.91	2.71	.86	3.06	.87	9 th	Agree
Video tapes	3.29	.92	3.32	.95	3.26	.99	3.13	.88	2.82	1.08	3.19	.99	2 nd	Agree
Online databases	2.45	.72	2.72	.90	3.04	1.05	3.19	.70	2.99	.92	2.79	.90	15 th	Agree
Multimedia projector	2.98	.99	3.21	.89	3.39	.86	2.68	1.11	3.08	1.07	3.10	.98	6 th	Agree

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Result in Table 1 revealed the types of EIRs used by postgraduate students for research output in university libraries in South-East, Nigeria. Respondents in UNIZIK, UNN, Michael Okpara, Alex Ekwueme Federal University, and FUTO unanimously agreed that; electronic journals, video tapes, multi – media resources, electronic magazines, online public access catalogue (OPAC), multimedia projector, world wide web, sound recording, Internet, electronic newspapers, were types of EIRs used by PG students for research output. Responses on electronic journals has the highest frequency with overall mean score of 3.24, followed by video tapes, multi – media resources, electronic magazines, online public access catalogue (OPAC), multimedia projector, world wide web, sound recording, internet and electronic newspapers, which have overall mean scores of 3.19, 3.16, 3.13, 3.12, 3.10, 3.09, 3.08, 3.06, 3.03. From the Table, the overall mean revealed that all the items (1-20) recorded a minimum mean value of 2.50 and above; indicating that the extent to which EIRs are used by postgraduate students for research output in university libraries in South-East, Nigeria is high. The Table also revealed that standard deviations of the 20 items ranged from .87-1.03; indicating that the respondents were homogenous in their response.

Table 2: Mean and standard deviation of respondents on the nature of research output produce by postgraduate students in university libraries in South-East, Nigeria

Item Statement	UNIZIK		UNN		Michael Okpara		FUNAI		FUTO		Overall Mean		Rank	Remark
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD		
Undergraduate project	3.00	0.96	3.03	0.96	3.18	0.78	3.00	1.06	3.21	0.91	3.08	0.95	5 th	Agree
Conference papers	3.38	0.83	3.34	0.90	3.23	0.89	3.23	0.84	3.04	0.81	3.26	0.86	1 st	Agree
Seminar papers	3.05	1.02	3.04	1.00	2.93	0.86	3.10	0.83	3.26	0.91	3.07	0.96	6 th	Agree
Journal articles	3.06	0.96	3.02	0.90	3.09	0.95	3.32	0.79	2.33	0.76	2.93	0.94	8 th	Agree
Postgraduate thesis/dissertation	3.22	0.95	3.03	0.85	3.21	0.99	2.65	1.02	2.97	1.02	3.07	0.96	6 th	Agree
Book publications	3.08	0.81	3.08	0.91	3.35	0.74	2.74	1.09	3.33	0.87	3.14	0.88	4 th	Agree
Monographs writing	2.45	0.72	2.88	1.02	2.82	0.91	3.16	0.82	2.99	0.99	2.80	0.93	9 th	Agree
Conference proceedings	3.29	0.92	3.14	0.89	3.33	0.89	2.97	1.02	3.01	1.01	3.17	0.94	3 rd	Agree
Editorial duties	3.03	0.98	2.96	1.02	3.16	0.73	3.13	0.88	3.21	0.91	3.07	0.93	6 th	Agree

Research works/consultancies	3.39	0.83	3.07	1.04	3.33	0.98	3.32	0.83	3.03	0.80	3.21	0.91	2 nd	Agree
Workshop paper	3.05	1.02	3.14	0.84	2.77	1.02	2.77	0.88	3.25	0.93	3.05	0.95	7 th	Agree

Result in Table 2 revealed the nature of research output carried out by postgraduate students in university libraries in South-East, Nigeria. Respondents in UNIZIK, UNN, Michael Okpara, Alex Ekwueme Federal University and FUTO, indicated that conference papers with overall mean of 3.26 ranked the highest, seconded by research work/consultancies with mean score of 3.21, conference proceeding came third in the ranking with overall mean of 3.17, book publications had overall mean score of 3.17, undergraduate project 3.08, seminar papers 3.07, were the research output carried out by PG students, Others are editorial duties, workshop paper, journal articles, monograph writing with overall ratings of 3.07,3.05, 2.93 and 2.80 respectively. The decision regarding all the items as the nature of research output carried out by postgraduate students in university libraries in South-East, Nigeria was based on the fact that all the items had a minimum mean value of 2.50 and above set for decision rule. The standard deviations of the 11 items ranged from .88-.95; indicating that the respondents were homogenous in their response.

Discussion of the Findings

Nature of Research Output Carried out by PG Students for Research

The results revealed that respondents in UNIZIK, UNN, Michael Okpara, Alex Ekwueme Federal University, FUTO generally indicated that the nature of research output carried out by PG students for research includes; conference paper, with highest rank seconded by research works/consultancies, conference proceedings, book publications, undergraduate projects, seminar papers, postgraduate thesis/dissertation, editorial duties, journal articles and monographs writing. This finding corroborates with the view of University of Southern Queen (2022) and Omotesho as cited in (Tella, & Onyanacha, 2021) which stated that research output, is the publications in professional journals, books, articles, conference proceedings, technical reports, creative writing among others. Also, still corroborating with the findings, Ifideh, et. al.(2018) recorded that research output is the outcome from journal articles, chapters in books, technical reports, conference papers, edited works, workshop papers, thesis and other types of publications. Desmennu and Owoaje, (2018) observed that doctoral research has a serious effect on the nation's research output which invariably impact the community as a whole. Research is the main focus of the PG programme, it determines the placement and progress of any university and the nation at large. Through research, the ideas of an author are communicated to the outside world. Research output is used to evaluate the strength of each academic staff. In agreement, Everinmene and Eze, (2021) stated that e-thesis/dissertation boosts universities' ranking, enhances their visibility, and enables students to save their research works. The nature of research output helps in the evaluation of the strength of each academic and the institution, the above

findings revealed that research and publication have a link to the growth and development of academic staff in any university. Also, Abubakar and Owalabi, (2013) found that research enables PG students to discover societal challenges or imbalances and develop a solution or way forward to those problems. In agreement, Mulinge and Arasa, (2013) affirmed that postgraduate training is rooted in research. The quality of their research is essential for any nation's long-term economic and social progress.

Types of Electronic Information Resources Used by Postgraduate Students for Research Output

The overall mean revealed that all the items (1-20) recorded a minimum mean value of 2.50 and above; indicating that the extent to which EIRs are used by postgraduate students for research output in university libraries in South-East, Nigeria is high. The result is in agreement Bankole, et. al.,(2015) in their studies revealed that the respondents were frequent users of e-resources, types of e-resources used were Internet, search engines, e-lecture notes and e-books, for class assignment and to be well informed in the latest developments in their various disciplines Majority of the respondents from the five federal universities under study indicated that they used the following e-resources for research output; electronic journals, video tapes, multi – media resources, institutional repository, electronic magazines, Online Public Access Catalogue (OPAC), multimedia projector, electronic books, electronic seminars/conference, world wide web, sound recordings, electronic archives, electronic thesis/dissertation, Internet, e-newspaper, e-mail, e-encyclopaedia, electronic thesis/dissertation, search engine. This is in tandem with the study of Bulama, et. al.,(2017), which revealed that the availability of e-resources enables the students to find e-journal, e-books, e-magazines, e-database, e-subject guides, e-newsletters, e-white paper, e- audio, e-exhibition, e- conference and web search tools on various discipline.

Also, the study of Akinola,et. al. (2020) and Padamamma and Walmiki, (2017) corroborates with the result that e-journal and e-newspaper are important source of information that is commonly used by postgraduate students. Still in agreement with the findings Uwandu, (2022) revealed that e-journals, e-books, e-newspapers, e-conference proceedings, Online Public Access Catalogue (OPAC), CD-ROM databases, e-magazines, electronic databases, online databases, e-theses and dissertations and Internet resources are the types of electronic information resources available for use by postgraduate students in the five university libraries for their research and study. In agreement Bankole, et. al., (2015) in their studies revealed that the respondents were frequent users of e-resources, types of e-resources used were Internet, search engines, e-lecture notes and e-books, for class assignment and to be well informed in the latest developments in their various disciplines. The study noted that the respondents were satisfied with library e-resources since access can be made from any location. The respondents agreed that Online Public Access Catalogue (OPAC) can be used to search the entire catalogue globally and determine the status of a book. In support, Swaminathan, (2017) found that majority of the respondents made

frequent use of the system to know the existence of documents and their locations and to identify new arrivals.

In contrast, the overall result of the findings is in contrast on the findings of Madondo, et. al., (2017) on the use of electronic resources in African university library Jomoko, Yamech that made several efforts to procure e-resources, provides access to these resources and information and the train users but the result of the study found that practical use does not justify the amount spent in purchasing them. This might be attributed to a lack of information literacy skills or lack of awareness of the availability of those resources at their disposal. When students fail to make good use of those resources, it amounts to the wastage of resources.

Conclusion

The evolution of e-resources has drastically transformed access and usage of current information for research development by postgraduate. It has increase the quality of research output, save time and reduced the stress of students visiting the libraries to access current information physically thereby making their work easy. Postgraduate research outputs can now be accessed anywhere and anytime with internet connected devices changing the narrative of the nature of research output reduced and submitted by these students. Also, university libraries should invest more on acquisition and subscription of e-resources to enhance access to relevant and current for quality research. To ensure usability of these e-resources, librarians should market these information to the students and train them on the necessary skills on how to access these resources to enhance research productivity.

Recommendations

Based on the findings of this study, the following recommendations are made

1. To ensure that these postgraduate have more electronic resources for their research work the University management should make it compulsory for every postgraduate to publish one online journal, chapter of book and a conference paper in a proceeding before graduation to increase the nature of research produced and used by postgraduate. The submitted softcopies should be uploaded to the university's library website for greater accessibility and usage. This will increase the quantity of university research output and increase the online visibility of university.
2. The university library management should invest more on the acquisition and subscriptions to e-resources to ensure that postgraduate students have access to different types of e-resources to enhance their research output.

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