ISSN: 2756 – 4118 *African Journal of Science Policy and Innovation Management* Volume 1, Issue 2. December, 2020
ajspim.oauife.edu.ng

A COMPARATIVE ANALYSIS OF THE IMPACT OF PAID AND OPEN ACCESS ONLINE REPOSITORIES ON TERTIARY HEALTH EDUCATION AND PRACTICE IN SOUTHWESTERN NIGERIA

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ABSTRACT
This study assessed the impact of the use of paid and open access online repositories on tertiary health education and practice in Southwestern Nigeria. This was with a view to inform policy makers and practitioners on how access to online repositories could impact medical training and practice. The study was conducted in Southwestern Nigeria and focused on the teaching hospitals in the area. Data was collected using one set of structured questionnaire administered on 150 respondents made up of 100 medical students, 25 resident doctors and 25 medical consultants selected from five teaching hospitals in Lagos, Osun, Oyo, Ekiti and Ogun States. Impact of repositories was measured on five-point Likert scales (1 = rarely/no impact; 5 = very frequently/very high). The results showed that respondents consulted online repositories almost every time (3.77). They rated high the importance of paid (2.79) and open (3.40) access online repositories to acquiring knowledge. Respondents also indicated that paid and open access repositories had a high impact (3.60 and 4.29 respectively) on performance as medical students and practitioners. Though these results were on the same Likert scales, results for open access repositories had higher means. The study attributed these results to the availability of most materials on open access repositories and recommends the storage and use of reference materials on open access repositories.

Keywords: Online repositories, Health education, Medical practice, Nigeria

1.0. INTRODUCTION

Health epidemics threaten to limit the prospects of most developing countries and eliminate the improvement of development indicators. As a result of health epidemics that have occurred, the vital indicators of human development have worsened in terms of rate of child mortality, and life expectancy (Allen and Seaman, 2013). The development and provision of public education programs in the field of education, training and research are among the strategies identified to achieve health outcomes (Shearer, 2005).

Medical research is a branch of scientific enquiry that aims to investigate, discover and exploit information to improve or develop new rehabilitation strategies for the prevention and treatment of diseases. It broadens knowledge about the prevention, treatment, identification and analysis or reduction of the symptoms of diseases (Watson, 2007). In modern times, the regulation of the medical profession includes legal authorization for the practice of medicine (Medical and Dental Association of Nigeria, 2009). To qualify for this license, certain achievements and standards in medical education must be met. Normally, these standards are met with a degree in medicine acquired in some accredited universities. In training as a doctor

to practice in Nigeria, each phase requires information and institutional memory to access research. A doctor undergoes education and training to reach the stage of acquiring a licence to practice. After secondary education, the student spends six years in medical school, one year under housemanship and another year as a Youth Corper, making a total of eight years from starting university to practicing medicine. To become a specialist, an additional 4-7 years of residency is required in a teaching hospital. This means that to become a specialist doctor, between 12 and 17 years of training is required (Medical and Dental Association of Nigeria, 2009).

Medical research will help enhance knowledge in the field of medicine. The need for information requires physicians and patients access to repositories (Dressler, 2007). The medical online repositories offer the maximum potential for application and improvement of any activity or process that requires information not only to save human lives but also to improve healthcare and access to information on preventive measures against epidemics such as HIV/AIDS, tuberculosis, cholera and malaria (Dressler, 2007). Health workers and policy makers practice health research. However, these end users may have limited access to peer reviewed materials in subscription journals (Alemayehu, 2010). Many research outputs are produced at different medical departmental offices and research institutions without getting published, while some eventually get published in local journals that have minimal circulation due to poor accessibility or funding. After so much commitment of efforts and resources in conducting research, the outcome is not widely disseminated. These research findings die at the research institute or offices since those who need to apply the knowledge are unable to access them. Open Access Publication (OA) is one strategy that facilitates access to these research results to improve health education and practice. Another form of online repositories are paid journals. However, access to this collection of knowledge is often difficult because print and online scientific journals are relatively expensive. This has reduced the barriers to access research in Africa especially. Many in academia also believe that paid journals deliver quality knowledge and enhance learning better than open access journals. The advent of online sharing platforms such as YouTube has also served to disseminate specialized knowledge in many fields of academic endevour. There is a critical need to deliver research results to many academics and elites. Online repositories may be used to mitigate this problem of access to knowledge and training materials for professional disciplines. However, the specific forms of repositories used and their impact on medical training and practice is not yet well established. There is therefore, the need to examine types and the impact of usage of online repositories in tertiary health education. It is hoped that the outcome of this study will useful for policy makers and medical researchers and practitioners in developing initiatives to enhance medical training and practice through online repositories.

2.0. Related Literature

The history of institutional deposits is quite short and is a relatively new topic in the field of information management and publishing. The first disciplinary deposits were created in the early 1990s. Sarika-Sawant (2012) identified several successful deposits especially the ArXiv deposits. Swan and Chan (2010) reports that institutional repositories were launched at the same time as the World Wide Web and ArXiv's first online storage in 1999. The development of the World Wide Web in 1991 became a key element in the development of interdisciplinary research, combining data from all domains such as the ArXiv and Web of Science (WoS). This expanded most areas of physics, mathematics and computer science. Its success led to the creation of several institutional repositories, such as Research Papers in Economics (RePEc)

and Research in Economics, Economics of Management, Cognitive and Information Technology, and Education.

The development of institutional repositories appeared in response to profound changes in scientific communication. This new form of digital scholarship is an important source for current research and learning. It has enabled universities reduce their library budgets at a time when the costs of scientific journals were increasing. Therefore, it is imperative that new ways are developed to overcome all these problems. With the invention of World Wide Web (www), things evolved. The World Wide Web facilitated very simple and inexpensive ways to publish and distribute information in a digitally.

In 2002, Crow published an article highlighting the key problems facing institutions and consortia in establishing an institutional framework. The document indicates that Institutional Repositories (IR) are an essential element of the reform of the university's communication and learning system. Access to IR could be a specific indicator of the quality of a university and the scientific, social and economic importance of its research, which may serve by its visibility, status and public value. Lynch (2006) gave his opinion in defence of IR, saying it would improve academic communication and scholarship. Lynch (2005) defined the existing evolution of institutional repositories and attempted to explain why access to institutional repositories are so strategically important to scholarship and academic initiatives. Shearer (2005) conducted a survey to determine the status of the institutional repositories of members of the Canadian Association of Research Libraries (CARL). The author argued that content creation remains one of the main obstacles for CARL librarians. According to Joint Information Systems Committee (JISC) (2012), online repositories have potential for value services and offer a range of benefits to institutions, researchers, professors, students, the global research community and the world. According to Crow (2002), although publications from academic journals may be added to the institutions in which they operate, institutional filing must be more influential and incorporate the research findings of researchers from other institutions.

Scientific communication is a wider concept that is reflected in the creation of knowledge about the various processes by which academics exchange information. According to Shearer (2005) scientific communication is divided into three main areas: the research process, the development of ideas and independent communication with other scientists, and planning and communication with other peer groups.

The Association of African Unions (AAU) launched a DATAD 2000 project to improve access, and control of IR use in Africa. In the same vein, Okojie (2008), the Chairman of the Nigerian Library Board, asked libraries in Nigeria to use an open access event to develop electronic deposits with many institutions. Krishnamurthy and Kemparaju (2011) examined 20 categories of institutional repositories used at Indian universities and research institutes. In their opinion, an institutional repository is a natural extension of the role of an academic institution as a primary research designer. Institutional repositories are cost-effective and a strategic means for universities to build partnerships with their peers to develop professional communications. Institutional repositories rely on practices to compare the results of an online search, usually on private websites, but also on institutional websites or in disciplinary repositories. In addition, IRs enable universities to provide digital hosting and storage services in conjunction with the most effective web service while universities can benefit from better visibility of their

research results. IRs increase access to research, facilitate access to research results from universities and ensure a sustainable digital content management system.

3.0. Methodology

Survey research design was used in the study. The primary source of data was through the use of questionnaire, and interviews. Copies of the questionnaire were not only administered but also discussed with respondents and followed up until retrieved. The study was confined to teaching hospitals in Lagos, Oyo, Ogun, Ekiti and Osun States in Southwestern Nigeria. Multi-stage sampling technique was employed for the study. The questionnaire was administered on 150 respondents made up of 100 medical students, 25 resident doctors and 25 medical consultants. The respondents were selected using a two-stage sampling procedure. The first stage involved the selection of five teaching hospitals in Lagos, Osun, Oyo, Ekiti and Ogun States. The second stage involved random selection of 20 medical students, five resident doctors and five medical consultants from each of the teaching hospitals making a total of 150 respondents.

The questionnaire elicited information on the type of repositories used, how frequently they were used and their impact on performance and importance to learning. Frequency of use was measured on a five-point Likert scale; rarely, occasionally, usually, frequently and very frequently. Impact on performance and importance of repository to learning was also measured using various five-point Likert scales as appropriate. Themes for the scales include importance (of no importance to very important) and quality (Very low to very high)

4.0. Results and Discussion

Socio Demographic Characteristics of Respondents

One hundred and thirty-two copies of the questionnaire were returned and found useful. Twenty-five respondents (18.9%) were from Federal Teaching Hospital Ekiti, 28 (21.2%) were from Lagos State Teaching Hospital while 26 (19.7%), 32 (24.2%) and 21 (15.9%) were from Ogun, Osun and Oyo State teaching hospitals respectively. Majority (71.2%) of the respondents are medical students. About 17% and 12.1% of the respondents are resident doctors and medical consultants respectively.

Table 1 shows that the most common materials accessed for health education and practice by the respondents. About 67% claimed they accessed Gray's Anatomy, a text book about the human anatomy. Schwartz's principal of surgery, a seminal text book of surgery was reported to be accessed by 34.1% of the respondents, principle of neutral science of neural activity, a book on clinical neurology and psychiatry by 24.2%, and Goldman Cell Medicine on neurology and dermatology by 35.6% of the respondents. The high number of respondents that claimed to access Gray's Anatomy may be due to the fact that it contains information for nearly all fields of medicine while the rest are specialized. Interviews revealed that most of these books can be accessed free online. Nearly all (98.5%) used MEDSCAPE/WEBMD. This online repository provides the latest information to clinicians, physicians and medical health professionals. The high number of respondents that use this source may be because registration and access to the site is free. About 77% of the respondents indicated that they accessed YouTube for videos on medical procedures and information. Approximately 91% of the respondents indicated they accessed medical literature through opensource journal repositories while 19.7% paid for access to journals and books while 43.2% used hard copies of these materials.

Table 1: Common Materials Accessible Online for Health Education and Practice

Characteristics	Frequency	Percent
Schwartz's Principal of Surgery		
Yes	45	34.1
No	77	58.3
Total	122	92.4
Principle of Neutral Science		
Yes	32	24.2
No	92	69.7
Total	124	93.9
Gray's Anatomy		
Yes	88	66.7
No	35	26.5
Total	123	93.2
Goldman Cell Medicine		
Yes	47	35.6
No	73	55.3
Total	120	90.9
YouTube Videos		
Yes	101	76.5
No	20	15.2
Total	121	91.7
Open source		
Yes	120	90.9
No	5	3.8
Total	125	94.7
Paid source		
Yes	26	19.7
No	92	69.7
Total	118	89.4
Hard copy		
Yes	57	43.2
No	61	46.2
Total	118	89.4
MEDSCAPE		
Yes	130	98.5
No	2	1.5
Total	132	100.0

Table 2 shows the mean rating of access to learning materials and sources of knowledge and practice. The mean value in Table 2 implies that respondents found it very easy (3.82) accessing new learning materials for medical treatments and procedures. Respondents also indicated that having access to online repositories is very important (3.98) in getting good grades and also find it very important (3.82) to success in treating new ailments. Many of the respondents interviewed in the course of administration of questionnaire indicated that they consulted

online websites such as WEBSCAPE for courses of treatment on patients with new ailments. Some claimed that the websites offered quick answers to enquiries. Table 2 further shows the importance of other repositories. The respondents indicated the mean values in the Table that traditional libraries (3.01), paid online repositories (2.65), open access online repositories (3.23), personal libraries (3.31) and class instructors (3.19) are all of average importance as sources of knowledge in the medical education and practice. One may imply that due to the practical nature of the profession, that learning is an ongoing process where all of these sources of knowledge although rated to be of average importance are equally of value.

Table 3 shows the rating of the best source of accessing repository. The Table shows that the mean value of 3.77 implies that the respondents use online repositories almost every time. Also, the mean value of 3.32 implies that the respondents indicated that paid repositories usually contribute to their knowledge. The mean value of 2.37 implies that respondents reported that open access repositories occasionally contribute to new knowledge. In addition, concerning the importance of paid access and open access to knowledge, the mean value of 2.79 and 3.40 implies that paid access and open access have high and very high importance respectively on new knowledge.

Concerning the importance of paid access and open access on the performance of the respondents, the Table further shows that the mean value of 3.60 and 4.29 implies that the positive impact of paid and open access repositories respectively on their performance was above average. These results may be somewhat surprising because it seems that the general consensus among scholars is that paid online repositories contain more referenced materials and are more reputable. In most open access repositories, the authors pay to publish and the review process is less rigorous. The results may be because the major medical materials accessed by the respondents, such as Gray's Anatomy are free online.

5.0. Conclusion

The study concluded that paid and open access online repositories are important to tertiary health education and training. Though these results were on the same Likert scales, results for open access repositories had higher means. The study attributed these results to the availability of most materials on open access repositories and recommends the use of reference materials on open access repositories. It will therefore be important to examine the challenges faced if any, by health practitioners to access online repositories in future studies.

ISSN: 2756 – 4118 *African Journal of Science Policy and Innovation Management* Volume 1, Issue 2. December, 2020
ajspim.oauife.edu.ng

Table 2: Rating of Importance of Types of Repositories

Characteristics	Frequency	Percent	Mean
Rating access to new learning materials and medical treatments			
Neutral	36	27.3	
Difficult	2	1.5	
Easy	67	50.8	
Very easy	18	13.6	3.82
Total	123	93.2	
Importance of access to online repositories to getting good grades			
Of little importance	3	2.3	
Of average importance	34	25.8	
Very important	49	37.1	3.98
Absolutely essential	38	28.8	
Total	124	93.9	
Importance of access to online repositories to success in treating new ailments			
Not important at all	2	1.5	
Of little important	7	5.3	
Of average important	36	27.3	3.82
Very important	39	29.5	
Absolutely essential	35	26.5	
Total	119	90.2	
Importance of traditional libraries			
Not important at all	11	8.3	
Of little important	26	19.7	
Of average important	34	25.8	3.01
Very important	49	37.1	
Total	120	90.9	
Importance of paid online repositories			
Not important at all	15	11.4	
Of little importance	36	27.3	
Of average importance	34	25.8	2.65
Very important	27	20.5	
Total	112	84.8	
Importance of open access online repositories			
Not important at all	3	2.3	
Of little importance	25	18.9	
Of average importance	35	26.5	3.23
Very important	59	44.7	
Total	122	92.4	
Importance of personal libraries			
Not important at all	3	2.3	
Of little importance	21	15.9	
Of average importance	33	25.0	3.31
Very important	62	47.0	
Absolutely essential	1	.8	
Total	120	90.9	
Importance of class instructors			
Not important at all	2	1.5	
Of little importance	27	20.5	
Of average importance	31	23.5	3.19
Very important	53	40.2	
Total	113	85.6	

Key = None = 1, Low = 2, High = 3, Very High = 4
Rarely = 1, Occasionally = 2, Usually = 3, frequently = 4, very frequently = 5

Table 2: The Rating of the Best Source of Accessing Repository (Cont.d)

Characteristics	Frequency	Percent	Mean
Extent of usage of online repositories			
Never use	1	.8	
Almost never	6	4.5	
Occasionally/Sometimes	45	34.1	
Almost every time	40	30.3	3.77
Frequently use	32	24.2	
Total	124	93.9	
How frequently has paid access repositories contributed to your knowledge?			
Frequently	11	8.3	
Very frequently	20	15.2	
Usually	24	18.2	3.32
Occasionally	31	23.5	
Rarely	23	17.4	
Total	109	82.6	
How frequently has open access repositories contributed to your knowledge?			
Frequently	26	19.7	
Very frequently	55	41.7	
Usually	19	14.4	2.37
Occasionally	14	10.6	
Rarely	8	6.1	
Total	122	92.4	
Rating importance of paid access to your knowledge			
None	13	9.8	
Low	20	15.2	
High	59	44.7	2.79
Very high	22	16.7	
Total	114	86.4	
Rating importance of open access to your knowledge			
None	3	2.3	
Low	10	7.6	
High	46	34.8	3.40
Very high	63	47.7	
Total	122	92.4	
How has paid access repositories positively impacted your performance			
Very low	13	9.8	
Below average	1	.8	
Average	40	30.3	
Above average	22	16.7	3.60
Very high	36	27.3	
Total	112	84.8	
How has open access repositories positively impacted your performance			
Very low	3	2.3	
Below average	1	0.8	
Average	25	18.9	
Above average	22	16.7	4.29
Very high	71	53.8	
Total	122	92.4	

Key = None = 1, Low = 2, High = 3, Very High = 4
Rarely = 1, Occasionally = 2, Usually = 3, frequently = 4, very frequently = 5

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