CHALLENGES OF USING ELECTRONIC INFORMATION RESOURCES FOR ACADEMIC RESEARCH BY POST-GRADUATE STUDENTS AT DELTA STATE UNIVERSITY, ABRAKA, NIGERIA

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ABSTRACT

This article reports on a study that explored the challenges of using electronic information resources (EIRs) for academic research by post-graduate students at Delta State University (DELSU), Abraka, Nigeria. The study used a structured questionnaire, distributed to 150 post-graduate students from the faculties of

Sciences, Social Sciences and Arts, that is, 50 post-graduate students per faculty, and personal interviews were held with selected individuals within the institution to collect data. The central focus of the study was the post-graduate students' access to EIRs; the current status of EIRs in their institution; how often they use these resources for academic research purposes; and above all, the challenges that they encounter when using EIRs. The findings showed that post-graduate students' optimal use of EIRs at DELSU is hampered by limited access to some EIRs due to limited space, low bandwidth, and erratic power supply. It is, therefore, recommended that DELSU should provide adequate space and power supply and should address some of the issues deterring equitable access to EIRs. Development of an institutional repository and use of open access resources would also improve access to scientific and electronic information.

KEYWORDS: electronic information resources, academic research, post-graduate students, Delta State University, Nigeria

1. INTRODUCTION

In recent times, advancement in information technology has changed the way in which information is accessed and disseminated. Electronic information resources (EIRs) have become an integral part of teaching and learning in most African colleges and universities. They have provided a wider access to information irrespective of geographical location or time in universities for teaching, learning, and research than the traditional print through the use of information and communications technologies (ICTs) by library patrons (Ani and Ahiauzu 2008, 505). Varghese (2008, 86) notes that

> electronic information environment facilitates enhancement in the speed of service, number of users served, the quantity and exhaustiveness of information provided, and further that electronic media, by their very nature and characteristics, provide new and exciting opportunities for post-graduate students in finding information related to their research areas.

Furthermore, EIRs are convenient to use, by virtue of the fact that users are able to access information from anywhere, be it the library, office, or at home. They also give the users an opportunity to explore various resources on related topics through different search techniques. Nigerian tertiary institutions are not excluded from the above process of accessing information; hence, the importance of the use of EIRs for academic research by post-graduate students in tertiary institutions.

However, except for South Africa and North African countries, most African countries struggle to key into the bountiful opportunities the Internet offers. Rena (2008, 10) indicates that 'with the exception of South Africa and the North African countries, namely Morocco, Algeria, Tunisia and Egypt who have much higher

Internet usage figures, the penetration of Internet in Sub-Saharan African countries is at an average of 0.2 per cent'. The reasons for these shortcomings could be attributed to numerous factors which border on unavailability and lack of awareness of EIRs. Oyewusi and Oyeboade (2009, 1) observe that

> university education in Nigeria is also facing a critical challenge of meeting new demands of the 21st century with its ever increasing population, inadequate library facilities, resources and insufficient funding, and thereby remark that adequate library resources and services, at the appropriate level for degrees offered, should be made available to support the intellectual, cultural, and technical development of students enrolled in Nigerian universities.

The objectives of the study were to determine the:

- accessibility of EIRs by post-graduate students for academic research at DELSU;
- current status of EIRs in the institution;
- frequency of accessing EIRs by post-graduate students for academic research; and
- problems and challenges that post-graduate students face using EIRs at DELSU.

The use of EIRs in carrying out research in this era of information explosion cannot be over-emphasised; hence, the need for creating awareness on its use. The main motivation for this study was to highlight the benefits of accessing EIRs on academic research by post-graduate students at DELSU, Abraka, Nigeria.[1] The difficulties experienced in getting access to up-to-date information has resulted in their reliance on whatever materials are available in the library. The study sought to pave the way for post-graduate students to have access to various EIRs that will expose them to varied writing skills and enable them to compete with post-graduate students all over the world. Not only will it help in their writing skills but it will also help to produce good research output that will measure up to world standards. In the current study, EIRs refer to digital and virtual information such as books, journals, magazines and any other reading materials that have been changed into computer readable format. The resources have made it possible for information to be easily accessed and have increased global dissemination, thereby saving time, solving storage problems and thus enhance the flow of information.

2. LITERATURE REVIEW

Academic libraries are increasingly taking advantage of ICTs to provide improved access to EIRs and services to their users (Ndinoshiho 2010, 57). In the current financially stringent environment, electronic journals have the potential of becoming a medium which is cheaper than traditionally printed journals, since they can easily be circulated and disseminated through various networks for easy access and retrieval by students and researchers (Ellis and Oldman 2005, 30). According

to Masinde, Okoh and Rajan (2011, 49), in the 1990s, it became imperative that drastic measures needed to be taken in order to reverse the deteriorating situation in which most African institutions were becoming cut off from current research and thinking from elsewhere. Several initiatives to increase the availability of scholarly information in Africa emerged, mostly driven by donors and non-governmental organisations. These efforts have resulted in a significant increase in the number of African institutions accessing these resources. Among the initiatives are: INASP's PERii program, eIFL.net, AJOL, JSTOR, schemes funded by commercial publishers and the United Nations, namely HINARI, AGORA and OARE (Masinde, Okoh and Rajan 2011, 49).

Tella, Owolabi and Attama (2009, 3) state that

> it is no longer news at this digital age that many libraries in tertiary education institutions are connected to the Internet or have plans to get connected soon, as this makes things easier for teaching, learning and research to take place.

Etim (2006, 1) identifies lack of Internet access as a major factor that has denied Nigerian students access to the latest information for their learning and research; however, he highlights the efforts made by Nigerian university libraries to support librarians with Internet application for efficient information access and retrieval by students through various initiatives, such as the Nigerian Universities Network (NUNET), National Virtual Library Project (NVLP) and Nigerian Virtual Library Consortium (VLC) to provide reliable Internet connectivity in Nigerian universities (Okon 2010, 560). According to Okon (2010, 555), 'though the Internet has been integrated into major academic activities in Nigerian universities within the past decade, there still exists a digital divide or inequitable access within the system'. Most universities in Nigeria have yet to adopt a policy of providing equitable Internet access for their staff and students. The people who are mostly affected by inequitable access to the Internet at these universities have in fact been the post-graduate students. Afolabi (2007) notes that 'the shortage of current and up-to-date information for research in Nigerian university libraries has been a major source of concern to both the library management and research community in the country'. Bozimo (2007) also affirms that statistics show that EIR usage in Nigerian university libraries is low. As indicated by research carried out on the use of the cybercafé at DELSU by Adomi, Omedeko and Otolo (2004, 387), Yahoo and Google are the search engines most frequently used by most of the students. This low usage of EIRs at DELSU may contribute to the reason for post-graduate students not excelling and enhancing their research skills through electronic media. The study, therefore,

focused its attention on the challenges of using EIRs for academic research by post-graduate students at DELSU.

Okiy (2003, 158–161) conducted a study of citation analysis on a total of 4 012 citations in 70 post-graduate dissertations in education submitted to the DELSU library between 1992 and 2002. The results of the study showed that most post-graduate students in education use more textbooks than other forms of library materials. Textbooks and monographs were highly cited, with a total of 2 418 citations, while journals had only 982 citations. These findings provide an insight into the low level of availability and use of ICTs for collection management. The data captured also revealed that mere availability of ICT facilities does not guarantee their use for collection management in the libraries, but availability matched with adequate power supply and enthusiastic work force matters. Since no other study has been conducted on the use of EIRs at the institution after Okiy's (2003), the current study sought to establish if there have been any changes regarding accessibility and usage of EIRs after a decade.

## 3. METHODOLOGY

One hundred and fifty questionnaires were distributed to post-graduate students in the faculties of Science, Social Science and Arts at DELSU, that is, 50 questionnaires to the first 50 volunteering students in each faculty. This was done while these students were attending their block classes in June 2011. One hundred and fifty respondents might be insufficient to draw conclusions and to fully represent the total number of registered post-graduate students at the institution. For this reason, the study adopted both quantitative and qualitative research approaches, through the use of the questionnaire and interviews, respectively. Byrne and Humble (2007, 1) affirm that the underlying assumption for using more than one data collection method is to complement each other. The questionnaire was tailored towards exploring the challenges faced by post-graduate students in using EIRs for academic research by determining whether or not respondents had access to EIRs; their perspectives regarding the current status of EIRs in their institution; how often they use these resources for academic research purposes; and above all, the challenges that they usually encounter in using EIRs. The researchers also interviewed ten individuals: eight of them were post-graduate students who were asked about the challenges they as students face when trying to access EIRs at the institution. The other two were a library staff member and the head of the ICT section in the library, who were asked about the challenges that they encounter in their quest to provide EIRs to library users.

4. FINDINGS AND DISCUSSIONS

4.1. Access to EIRs

The first question was aimed at soliciting information from the participants on the accessibility of EIRs to post-graduate students at the institution in order to determine the EIRs that the respondents could access. Figure 1 shows that a total of 140 (93.3%) of the respondents indicated that they had access to e-journals, whilst 10 (6.7%) of the respondents could not access e-journals; 96 (64%) gave positive responses about access to e-books, whilst 56 (36%) of the respondents could not access e-books. Most of the respondents gave negative responses about access to e-magazines and e-theses at 130 (87%) and 93 (62%), respectively. This means that only 20 (13%) could access e-magazines and 57 (38%) could access e-theses and dissertations. Bibliographic databases that are also in electronic format could be accessed by 130 (88%) of the respondents, while 18 (12%) could not access them.
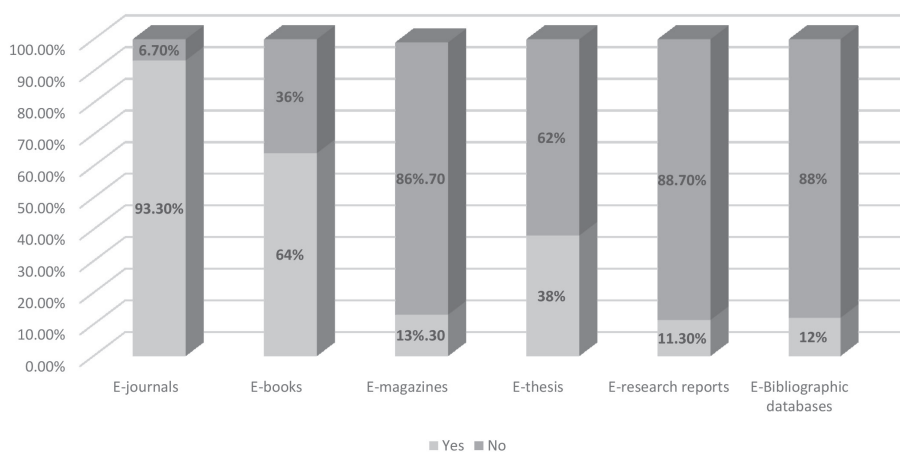

Figure 1: Access to EIRs (N = 150)

The results indicated that the post-graduate students have more access to e-journals and e-books, while access to e-theses, e-magazines, and e-bibliographic databases is minimal. E-journals are easily searchable and they offer increased accessibility to information irrespective of time and location – even for those who are not within easy reach of the library. Hamade and Al-Yousef (2010, 361) opine that users, in general, prefer e-journals because they make their work easier and give them the information they need. Rapid online access and the ability to download, print, and send articles electronically are some of the main advantages of e-journals for all user groups. There are, however, different types of access given to different people depending on different levels of subscription which allow access either to abstracts or

to full text only. E-books, on the other hand, are not as easily and quickly accessible as e-journals, but are portable and make it easy to access the entire library collection, depending on the conditions set out by the e-book publishers. The low level of access to e-theses and e-magazines may not necessarily mean that these resources are not available but rather that post-graduate students either do not know how to access them or are unaware of their existence.

In order to determine the respondents' levels of awareness and their knowledge of EIRs, the respondents were asked to indicate the extent to which they know about these resources. Two (2%) of the respondents indicated 'To no extent'; 107 (74%) responded 'To some extent'; and 41 (24%) answered 'To a large extent'. This is indicated in Figure 2, and it means that at least most of the respondents are aware of the existence of EIRs at the institution.
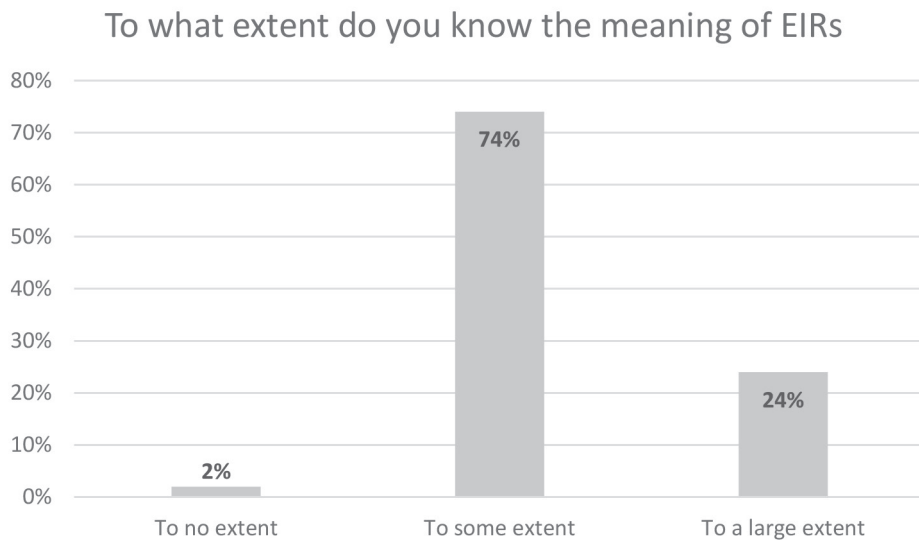
Figure 2: Awareness of EIRs (N = 150)

4.2. The current status of EIRs

In order for the researchers to ascertain the current status of electronic information in the institution, the respondents were asked to indicate whether EIRs were at an introduction, a nascent or a fully installed stage (see Figure 3). According to their responses, 72 (48%) of the respondents indicated that EIRs are at an introduction stage. However, 49 (33%) of the respondents said they are at a nascent stage. Only 29 (19%) of the respondents responded that EIRs are at a 'Fully installed stage'.

What is the current status of EIRs at your institution?
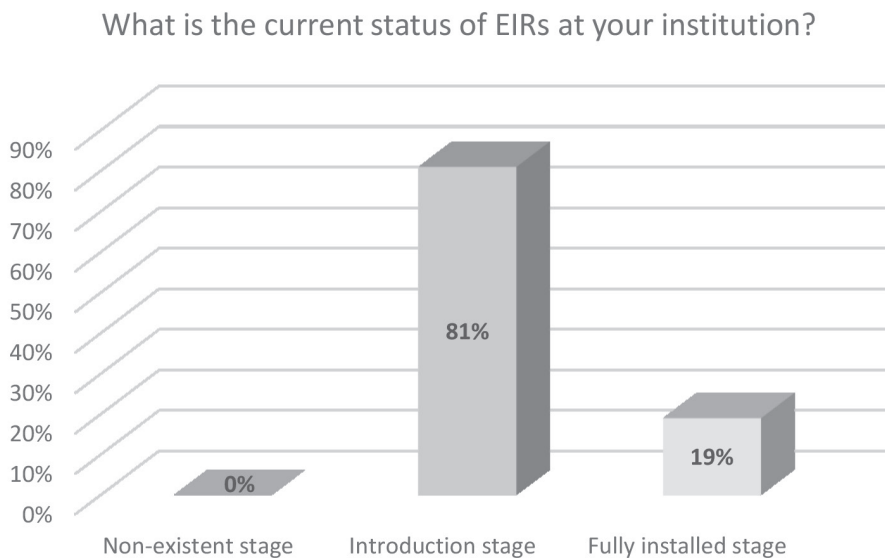
Figure 3:   Current status of EIRs at the institution (N = 150)

As noted in the Technology Acceptance Model (TAM), one other factor that influences an individual's use of EIRs is organisational support. Organisational support implies providing necessary infrastructure, incentives, training, and creating an environment conducive to change that encourages individuals and groups in an organisation to accept computers and related technologies. This implies that the attitude of an individual's organisation towards electronic information and the resources provided for effective utilisation largely depends on the support given in terms of resources made available, training on the use of such resources, showing commitment and support with the ease of adapting to technological changes (Davis, Bagozi and Warshaw 1989).

Alasa and Kalechukwu (1999) observe that the state of the information network in Nigeria is weak with serious consequences on the socio-economic development in the country, and that the inability of the libraries to provide access to information for researchers needs to be looked into by major stakeholders. Afolabi (2007) corroborates this with the observation that 'within the higher education in Nigeria, the libraries are far from up-to-date in resources: books, journals, abstracts and other collections are not current; there are gaps in sequence, which could be critical for knowledge generation and dissemination'. This means that provision of a well-equipped library in terms of EIRs cannot be over-stressed. Kumar and Singh (2011, 34) contend that 'electronic information resources form an integral part of libraries assisting the users in learning, teaching and research'. It is, therefore, the responsibility of the library

to keep pace with technological developments and cope with users' demand for e-information. It is also important to note that a well-established and organised library is essential for any academic institution because libraries have long-term experience in systematising and mediating information that is needed by universities for research and education. As such, scientific research and development, graduate studies study, and, to a certain extent, professional specialisation, depend on information which can be made accessible via the academic library but is only made possible if libraries are well equipped (Kont 2010, 84–85).

4.3. Frequency of accessing EIRs

With respect to the question regarding post-graduate students' frequency of accessing EIRs for academic research, most of the respondents (106; 70.7%) indicated 'Often'; a lower number of 31 (20.7%) of the respondents indicated 'Always'; while 13 (8.6%) respondents indicated 'Rarely'. None of the respondents indicated that they had 'Never' used EIRs, as shown in Figure 4.
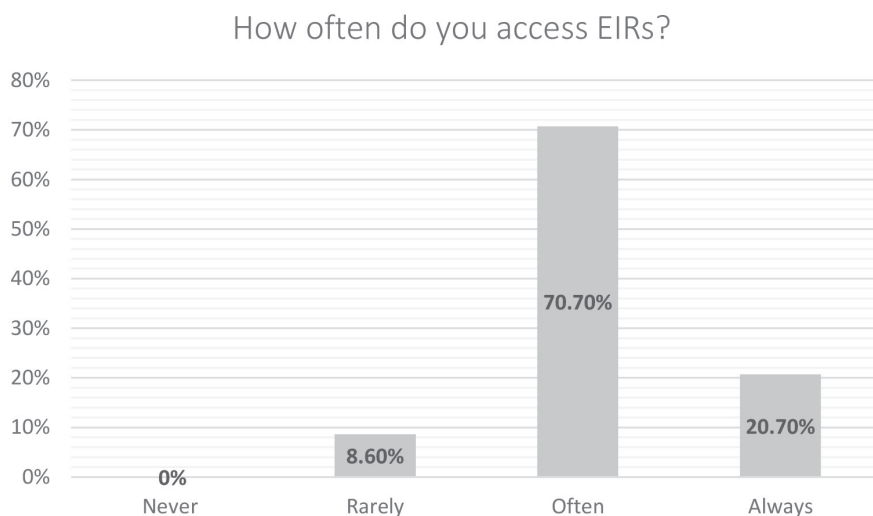
Figure 4: Frequency of accessing EIRs (N = 150)

The researchers observed that the frequency of using EIRs is an important indicator of how these resources are utilised. This implies that the majority of post-graduate students use EIRs, and according to the TAM, an individual will tend to use a technology due to its perceived ease of usefulness (Davis et al. 1989). A survey conducted on emerging patterns and trends of utilising EIRs in a higher education environment in Australia showed that EIRs are used very frequently, with more than 59 per cent of the respondents accessing them more than once a week (Deng 2010,

92). Similarly, this study indicated that over 70 per cent of the respondents use EIRs more often.

As noted by Liu (2006, 583), 'the use of electronic and print resources varies in different disciplines'. Even though the use of electronic sources and online reading habits vary by discipline, the frequency of printing out electronic documents is surprisingly similar across all disciplines. Electronic sources are more frequently used than print sources. As indicated by various studies, constant use of EIRs reveals that the frequency of access and use of web-based electronic databases helps in decision making in the work flow of an individual (Oduwole and Oyewumi 2010, 116). This implies that post-graduate students should be encouraged to access EIRs by ensuring that they are readily available due to their ease of access irrespective of time or location.

4.4. Problems encountered

In response to the interview question regarding problems encountered when trying to access EIRs, most of the respondents indicated lack of training on the use of ICTs and EIRs. This has resulted in finding irrelevant information when queries were made due to their inability to harness various EIRs and frustration in using them. Other factors that were noted by all the respondents were slow network and difficulty in downloading files which can be linked to the responses that indicated lack of access due to low band-width. Lack of space, insufficient ICT equipment, and erratic power supply were also highlighted as some of the problems they encountered when trying to access EIRs in their institution.

This might be due to the students' inability to harness various EIRs and the frustrations they encounter when using these EIRs. These problems could be attributed to the issue of the digital divide (the gap between those individuals who have reasonable access to technology tools and those who do not) which results in unavailability or lack of awareness. Like most African countries, Nigeria is still struggling to key into opportunities available via the Internet.

Chirra and Madhusudhan (2009, 12) affirm that the loss of journal subscriptions has a ripple effect as it hampers access to scholarly research and limits researchers' global research opportunities. This might be attributed to the rising costs of EIRs. Chiemeke, Longe and Umar (2007, 4) also observe that the inability of libraries to have access to current information and inadequate funds to finance development of EIRs are the major factors attributed to their low usage. Harle (2009) states that many African libraries have struggled to maintain good collections in the face of falling budgets, rising purchasing costs of EIRs and expanding student numbers. Egberongbe (2011, 7) confirms that 'a large number of e-resources users were not satisfied with the infrastructure available in the library'. Most lecturers and students indicated their dissatisfaction with IT infrastructure. This was attributed

to inadequate provision of infrastructure occasioned by lack of adequate financial support for both hardware and software infrastructure. This could also be the reason why most lecturers still attach importance to print materials.

The students were also asked to state some of the problems they encounter when accessing the Internet and other facilities. Most of them mentioned limited connectivity to the Internet provided by the university, for example, connectivity was only available in computer centres and some offices (Agboola 2010). According to the respondents, the following are the steps which the institution should take in order to successfully implement access to EIRs: some believe there should be constant training on how to use EIRs by the library staff; while others believe that the institution should provide adequate space for users, install more equipment to facilitate usage and make provision for wireless connections so that students can use their laptops. The majority of the respondents indicated that in order to check the issue of erratic power supply, a stand-by generator should be made available. It was also noted by most of the respondents that the institution should increase subscription to other databases, and the Internet bandwidth should be upgraded.

Provision of adequate space for users and installation of more equipment to facilitate usage and provision of wireless connections so that students could use their laptops were some of the responses from the library staff and library ICT head. These are steps that should be taken towards successful implementation of access to EIRs, in order to improve research output at the institution. They also indicated that in order to check the issue of erratic power supply, a stand-by generator should be made available at the institution. The library staff also noted the need for the institution to increase subscription to other databases, upgrade the Internet bandwidth, organise current awareness and train on the use of electronic information. The library ICT head also suggested that the library staff should be professionals in the use of ICTs so that they would be able to guide users on how to use the EIRs available in the library.

Harle (2010) corroborated on the study carried out on access to research in East and Southern Africa universities which found that awareness and better training in the use of e-resources; nurturing a research culture within institutions so that they could become consumers and producers of new knowledge; continued investments in access to and affordability of the Internet and electricity; and finally, increased availability of reliable and low cost computers are some of the ways in which EIRs could be successfully implemented. Ameen (2011, 173) also suggests that identification of major challenges and opportunities may assist those concerned to better prepare for meeting the needs of their communities. It is also recommended that a more extensive information marketing strategy should be developed at both subject librarian and departmental level in order to create awareness among graduate students (Fidzani 1998, 329).

To further substantiate on the steps institutions can take to successfully implement access to EIRs, Agboola (2010) suggests that Nigerian universities should

introduce a yearly orientation and library use programme into the general curriculum to help students better use library resources. Internet training is also needed to ensure that students acquire essential skills for Internet use. Libraries should also acquire more databases, and computer centres should be made more widely available on campuses. A consortium to provide high-speed Internet access to full-text scholarly journals that covers all disciplines is also essential to improve access to EIRs (Chirra and Madhusudhan 2009, 12). According to Haneefa (2007, 603), the biggest hurdle in the effective implementation of EIRs is that most libraries are hampered by lack of funds, infrastructure, and skilled professionals to embark on automation of all library management activities and application of ICTs. A sizeable number of the library users were dissatisfied with the application of ICTs in their libraries and indicated 'inadequate ICT infrastructure' as their major reason for dissatisfaction.

In the current study, the respondents were also asked what they think the hurdles to effective implementation of EIRs are. Some of the respondents indicated lack of understanding of EIRs and their benefits, while others felt that changing people's behaviour from using print information is the biggest hurdle in the effective implementation of EIRs. However, most of the respondents were positive that top management's lack of commitment to EIRs poses the biggest hurdle in effective implementation of EIRs, whereas few of the respondents thought that overcoming technological limitations is the biggest hurdle in effective implementation. The major reason for these problems could be insufficient funds to set in place facilities that will enhance effective utilisation of EIRs.

Meanwhile, Tahira and Ameen(2009, 80–96), Fatima, Ameen and Tahir (2009, 14–15) and Arshad (2009) have shown in their studies that Higher Education Commission (HEC) digital services are not fully utilised either by university librarians or researchers. Both parties lack skills and awareness regarding utilisation of digital knowledge resources readily available to them. Okoye and Ejikeme (2011, 5) have indicated that with open access, articles can be accessed online free of charge. They identified inadequate skills to navigate the Internet, unstable power supply, unavailability of Internet facilities, permanence of open access movement due to unstable financial support and lack of knowledge of the existence of open access journals on the Internet as constraints in the use of open access journals by researchers.

5. CONCLUSION

As observed from the literature review, it is obvious that the use of EIRs improves and impacts on academic research. However, despite the availability of EIRs, post-graduate students at DELSU still experience problems due to their inability to access certain information because the sources are subscription based. They also experience low Internet bandwidth, inadequate space, lack of training and erratic

power supply. It is evident from the analysis that increasing Internet bandwidth, as well as providing adequate infrastructure, space and training on how to use EIRs are essential for better utilisation thereof.

The study findings also indicate that EIRs provide a wide range of opportunities for post-graduate students and are easily accessible irrespective of time or place. However, certain problems have been observed as hindrances to the effective use of EIRs in the institution studied. The researchers believe that if these aforementioned problems are tackled by the institutional library, the post-graduate students will not only do better but will also be able to compete with post-graduate students in the other parts of Africa and the world in general. It will not only enable them to improve on their research but will help them to ascertain whether or not they produce research that conforms to world standards.

NOTE

1. This article forms part of a master's dissertation submitted in the Programme of Information Studies, University of Limpopo in 2013.

REFERENCES

Adomi, E. E., F. S. Omedeko and P. U. Otolo. 2004. The use of cyber café at Delta State University, Abraka. *Library Hi Tech* 22(4): 383–388.

Afolabi, M. O. 2007. Welcome address at the Electronic Information for Libraries Network (Elfl. net) Workshop, Obafemi Awolowo University, Ile-Ife, October 18.

Agboola, B. M. 2010. Entrepreneurial education in Nigeria tertiary institutions and sustainable development. http://files.eric.ed.gov/fulltext/ED512732.pdf (accessed August 13, 2015).

Alasa, M. and I. Kalechukwu. 1999. Internet and academic library services development in Nigeria. *Nigerian Libraries* 33(1): 17–35.

Ameen, K. 2011. Changing scenario of librarianship in Pakistan: Managing with the challenges and opportunities. *Library Management* 32(3): 171–182.

Ani, E. O. and B. Ahiauzu. 2008. Towards effective development of electronic information resources in Nigerian university libraries. *Library Management* 29(6/7): 504–514.

Arshad, A. 2009. Users' perceptions and expectation of quality library service. MPhil diss., University of Punjab, Lahore.

Bozimo, D. D. 2007. Address at the Electronic Information for Libraries Network (Elfl.net) Workshop, Obafemi Awolowo University, Ile-Ife, October 14–17.

Byrne, J. and A. M. Humble. 2007. An introduction to mixed method research. http://www.msvu. ca/site/media/msvu/MixedMethodologyHandout.pdf (accessed September 4, 2015).

Chiemeke, S., O. B. Longe, S. S. Umar and I. O. Shaib. 2007. Users' perception of the use of academic libraries and on-line facilities for research purposes in Nigeria. *Library Philosophy and Practice*. http://digitalcommons.unl.edu/libphilprac/116 (accessed June 7, 2011).

Chirra, R. and M. Madhusudhan. 2009. Use of electronic journals doctoral research scholars in Goa University India. *Library Hi-Tech News* 10: 12–15.

Davis, F. D., P. Bagozi and R. Warshaw. 1989. User acceptance of computer technology: A comparison of two theoretical models. *Management Science* 35(8): 982–1003.

Deng, H. 2010. Emerging patterns and trends in utilising electronic resources in higher education environment: An empirical analysis. *New Library World* 111(3/4): 87–103.

Egberongbe, H. S. 2011. The use and impact of electronic resources at the University of Lagos. *Library Philosophy and Practice.* http://digitalcommons.unl.edu/libphilprac/472 (accessed April 10, 2011).

Ellis, D. and H. Oldman. 2005. The English literature researcher in the age of the Internet. *Journal of Information Science* 31(1): 29–36.

Etim, F. E. 2006. Resource sharing in the digital age: Prospects and problems in African universities. *Library Philosophy and Practice*. http://digitalcommons.unl.edu/libphilprac/98/ (accessed September 1, 2015).

Fatima, N., K. Ameen and S. Tahir. 2009. Usability study of a federated search product at Punjab University. *Library Hi-Tech News* 26(9): 14–15.

Fidzani, B. T. 1998. Information needs and information seeking behaviour of graduate students at the University of Botswana. *Library Review* 47(7): 329–340.

Hamade, S. N. and S. Al-Yousef. 2010. The use of information resources by LIS graduate students in Kuwait. *Library Review* 59(5): 360–369.

Haneefa, M. 2007. The application of information and communication technologies in special libraries in Kerala (India). *Library Review* 56(7): 603–620.

Harle, J. 2009. *The Nairobi report: frameworks for Africa-UK research collaboration in the social sciences and humanities*. London: British Academy and the Association for Commonwealth Universities.

Harle, J. 2010. *Growing knowledge: Access to research in east and southern African universities*. London: British Academy and the Association of Commonwealth Universities.

Kont, K. R. 2010. Electronic scientific information in Estonia: Cooperation and state financing of academic libraries. *Journal of Inter-library Loan, Document Delivery and Electronic Reserve* 20(2): 83–101.

Kumar, S. and M. Singh. 2011. Access and use of electronic information resources by scientists of National Physical Laboratory in India: A case study. *Singapore Journal of Library and Information Management* 40: 33–49.

Liu, Z. 2006. Print vs. electronic resources: A study of user perceptions, preferences and use. *Information Processing and Management* 42(2): 583–592.

Masinde, S., T. Okoh and R. S. Rajan. 2012. Challenges of broadening access to scholarly e-resources in Africa: The JSTOR example. *African Research and Documentation* 117: 49–57.

Ndinoshiho, H. M. 2010. The use of electronic information services by undergraduate nursing students at the University of Namibia's Northern campus: A descriptive study. *Information Development* 26(1): 57–65.

Oduwole, A. A. and O. Oyewumi. 2010. Accessibility and use of web-based electronic resources by physicians in a psychiatric institution in Nigeria. *Program: Electronic Library and Information Systems* 44(2): 109–121.

Okon, E. A. 2010. Internet access and use: A study of undergraduate students in three Nigeria universities. *Electronic Library* 28(4): 555–567.

Okoye, M. and A. Ejikeme. 2011. Open access, institutional repositories and scholarly publishing: The role of librarians in South East Nigeria. *Library Philosophy and Practice.* http://digitalcommons.unl.edu/libphilprac/612 (accessed April 8, 2011).

Oyewusi, F. O. and S. A. Oyebade. 2009. An empirical study of accessibility and use of library resources by undergraduate in a Nigerian state university of technology. *Library and Philosophy Practice.* http://digitalcommons.unl.edu/libphilprac/227 (accessed August 10, 2011).

Rena, R. 2008. The Internet in tertiary education in Africa: Recent trends. *International Journal of Computing and ICT Research* 2(1): 9–16.

Tahira, M. and K. Ameen. 2009. Information needs and seeking behaviour of science and technology teachers of the University of the Punjab, Lahore. *Pakistan Journal of Library and Information Science* 10: 80–96.

Tella, A., K. A. Owolabi and R. O. Attama. 2009. Student use of the library: A case study at Akanu Ibiam Federal Polytechnic, Unwana, Nigeria. *Chinese Librarianship: An International Electronic Journal* 29: 1–17.

Varghese, R. R. 2008. Users' studies in the electronic environment: Review and brief analysis. *International Information and Library Review* 40(2): 83–93.

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