# *Essentials of*
# INFORMATION
## and
# COMMUNICATION
# TECHNOLOGIES
# IN LIBRARIES

## A BOOK OF READINGS

Edited by

**VICTOR N. NWACHUKWU** *Ph.D CLN*
**UZOAMAKA OGWO** *Ph.D CLN*

# INSTITUTIONAL REPOSITORY AS A PANACEA FOR eLEARNING AND RESEARCH OUTPUT IN A PANDEMIC ERA

Dr. Ajibili, Danjuma Onu

**Abstract**

*There is no doubt that Institutional Repository is a critical vehicle for enhancing eLearning and quality research output in an academic environment especially in a pandemic era. Putting into cognizance the influence of ICT in contemporary library and information services, this paper hence, discussed the concept of institutional repository and the vital role it plays in enhancing eLearning and quality research in a challenging time such as the Covid-19 pandemic era. The paper further discussed the various types of institutional repository for research and eLearning, the general importance of institutional repository to the academic world, the precise benefit of institutional repository to academicians, researchers and students alike. Finally, difficulties affecting the general development of institutional repository especially in the area of ICT, funding, copyright, intellectual property rights, etc.*

*Keywords: Library, Institutional Repository, eLearning, Research, Pandemic era.*

## Introduction

A library situated in a research, learning and teaching environment is generally known as an academic library and it basically provides information and materials needed for academic programmes of the parent institution. It also supports a major objective of the institution which is to promote academic (teaching-learning) and research work among undergraduates, postgraduates, lecturers and other members of the academic community. The academic library is the central point of all academic activities in any institution. Conventional academic libraries have overtime acted as institutional store places for research and learning resources. Be that as it may, contemporary libraries are beginning to use institutional repositories to change this role by digitizing library materials, while maintaining ties to the existing expertise and managerial infrastructure of an institutional library service. In fact, the key purpose of an academic library is to achieve excellence in teaching, research and extension work. In support of this view, Ifidon (1997) stressed that the central focus of any educational institute is its library because it is where students and staff resort to for academic nourishment. Abdulkadir (1996) as cited by Gani and Magoi (2014) further stated that the academic library should organize its collections, operations and services so as to provide for the reading and information needs of its users and facilitate prompt service delivery. It is also apparent that no contemporary institution would achieve its goal without a good and functional library that maximizes Information and Communication Technology such as the institutional repository, for its daily operations especially in a pandemic era such as now.

However, it is no gainsaying, that the Covid-19 virus has caused a global pandemic that has extremely affected several facets of human endeavor such as religious, economic, socio-political and most especially the education sector of

countries including world power countries. It degenerated from partial lockdown to full lockdown in major city centers in countries and has led to the closure of worship, commercial, political centers and worst of all schools and institutions. Despite this challenge, it is imminent that the library is still expected and required to provide its users with apt, current and relevant information resources to meet their information needs while they embark on eLearning, also to enhance the quality of their research output. This can be achievable via the Institution Repository which is more often than not hosted on the library's website and managed by the library. Prabhakar and Manjula Rani, (2018) were of the opinion that, the building of an institutional repository by academic libraries is needful in the present era of digital world because of changes like, technological change, significant increase in the overall volume of research, increasing need for archival and access to unpublished information, and increasing demand to access knowledge articles from wherever and whenever.

## Concept of Institutional Repository (IR)

The Institutional repository is a contemporary concept that captures and gives access to existing numerous academic research output hosted by their institutions and made available to users. Institutional repository is a vital part and a mechanisms of e-learning, where academic establishments exhibit their valuable research projects, programmes and initiatives to its vast users. The institutional repositories offers uninterrupted access to numerous research works that reflects previous, current, future research works as well as goals of their institutions. Dhiman (2011) sees institutional repository as, a sort of a database of digital information resources, accessible through Internet or Intranet. Barton and Waters (2004) further buttress that, in the first instance this might include electronic versions of documents such as research papers, project reports, patents, theses and dissertations but institutional repositories are the digital information warehouses of modern academic institutions. According to Mgonzo and Yonah (2014), an institutional repositories (IR) is an electronic store of web based scholarly digital documents owned by the institution. These digital documents consist of all electronic publications such as thesis, journals, books and conference papers (Okumu, 2015). In the same vein, Lynch (2003) sees institutional repositories as a set of services that a university/institution offers to the member of its community for the management and dissemination of digital materials created by the institution and its community members. According to Ware (2004) an institutional repositories is a web-based database (repository) of scholarly material which is institutionally defined (as opposed to a subject based repository); cumulative and perpetual (a collection of record); open and interoperable (e.g. using OAI-compliant software); and thus collects, stores and disseminates (is part of the process of scholarly communication). Hence, from the aforementioned definitions of various scholars, an institutional repository can simple be put as a databank for gathering, storing, preserving, and disseminating electronic copies of scholarly output of an academic establishment, especially a research oriented institution. Institutional repositories contain various outputs of an institution. Results of research works and

studies, teaching and learning resource materials are essential in the establishment of institutional repositories.

The repository could be regarded as both a library and a databank. . It is a digitized collection of an institution's academic properties hosted by its library that provides open access to these vast collection of indigenous academic works thus, increases the visibility of the institution by connecting with alumni of the institution or the colleagues of researchers. Institutional repositories may well also be a tool for supporting, internal and external assessment as well as strategic planning. It permits firms, public bodies and civil society organizations to acquire and comprehend skills and knowledge that are available locally and to utilize them to achieve a set goal. Sarker, Davis and Tiropanis (2010) classified institutional repositories into 2 types, namely: need to be shared and do not need to be shared. The repositories that need to be shared outside the institutions are classified as need to be shared and the repositories which do not need to be shared outside the institutions are classified as do not need to be shared. This classification enables institutions to understand the requirement and take decision for sharing information. The categorization of institutional repositories as regard need to be shared include course information, teaching and learning materials, academic staff and expertise information, research staff and expertise information, research output, research project, resource information and accreditation data need to be shared outside of the institutions; While, students' admission data, students' academic records (some selective data need to be made accessible), staff facilities, training information need not to be shared outside. However, the essential features of an institutional repository as outlined by Crow (2002) are that, it is institutionally defined, it is scholarly in scope, and it is cumulative and perpetual and open and interoperable. From the above definitions, IRs can be understood as digital archives that collect, preserve, disseminate and provide access to the intellectual capital of the university community. However, institutions are responsible for establishing and maintaining IRs for long-term accessibility.

## Objectives of Institutional Repository (IR)

It is no gainsaying that Institutional repository is beneficial to both institutions and scholars. Omeluzor (2014), stated that both institutions and contributors benefit from Institutional Repository (IR). In the same light, Crow (2002); Sharma, Meichieo and Saha, (2008), all had a common opinion and unarguable benefit of institutional repository which are thus: institutional repository serves as tangible indicators of an institution's quality by increasing its visibility, prestige, and public value; increases the ranking of an institution both at local and international level; enhances learning, online teaching and research especially in higher institution of learning; and presents an institution's intellectual capital to scholars. In fact, some literatures have it that, institutional repository has improved intellectual communication by encouraging innovation even within disaggregated publishing structure, and it provides immediate and valuable supplement to any deficient scholarly publishing model, while stimulating innovation that enhances resource sharing and provides long-term

solution. In the same vein, Dhanavandan and Tamizhchelvan (2013), further buttressed that, contributors also benefit from Institutional Repository (IR), as they access articles without hindrance and charges, open access to researchers, increased impact of researchers' work, easy accessibility to research work and creation of further research approaches, self-archiving and increased citation to published scholarly work among others. This means that apart from the institutions, academicians, researchers and other contributors to the institutional repository derive a lot of remunerations or benefits. Thus, the success of IR could be attributed to combine efforts of different stakeholders. Though, Pickton and Barwick (2006), grouped these benefits into the following categories:

a. IR increases visibility and prestige. A high profile IR may be used to support marketing activities to attract high quality staff, students and funding.

b. IR helps in centralization and storage of all types of institutional output, including unpublished literature.

c. IR supports learning and teaching. Links may be made with virtual teaching environment and library catalogues.

d. IR assists in standardization of institutional records. The compilation of an Institutional profile and individual online dossiers can be linked to full text of articles.

e. IR enables users to keep track of and analyze research performance.

f. IR breaks down publisher's costs and permissions barrier, alleviation of publication requirement, thus institutional repositories promote communication.

In the same vein, Dhiman (2011) also opined that, there are various objectives of institutional repositories which are thus: to create global visibility for an institution's scholarship, to collect content in a single location, to provide open access to institutional research output by self-archiving it, and – to store and preserve other institutional digital assets, including unpublished or otherwise grey literature, like theses or technical reports etc.

Meanwhile, Scholastica & Dike (2017), observed that, scholars attitude towards contents submission to the building of institutional repository may either be positive or negative depending on the approach adopted by university management. A positive attitude depends to a great extent on the understanding and acceptance of scholars. Davis, Bagozzi and Warshaw (1998), found that attitude of a user towards a system is a major determinant of whether the person will actually use or reject the system. Besides, users' attitude to a great extent is influenced by how the user perceives the system's usefulness and user-friendliness. Silas (2011), found that the positive influence of IR included expanding circulation of scientific work, creates global visibility for an institution's scholarly research and accelerates dissemination of research information. It also maximizes research, offers huge access to scholarly communication, access to archival literature, allows digital copies to be posted in subject institutional repositories, eliminates financial or permission barriers, enhances the speed with which articles are cited, provides unlimited space for tables, and allows for figures and video footage and collaboration with researchers around the world.

## Institutional Repository (IR), eLearning and Research Output

Academic institutions at the tertiary level are the focal points of scholarly and applied research in Nigeria. As regards university-based scholarly research, it started in our educational scene in 1948 with the establishment of the University of Nigeria, the first indigenous university in Nigeria. Nevertheless, as at today, the number of Federal, State and Private Universities in the country has grown to over 150.

Tertiary institution is also considered as a social institution and is expected to operate in alliance with the needs of the community such as development of individuals to enable creativity and thoughtfulness with extraordinary academic ability. According to Zare, Sarikhani, Sarikhani, and Babazadeh, (2015), achieving this objective will require the traditional teaching methods (lectures, etc.) which has little or no effect, to be supplemented with the implementation of e-learning in teaching-learning process. E-learning is becoming an influential force in higher education today, which has some kind of presence on almost every campus and in an ever increasing number of college and university courses. It is becoming an effective method of learning in digital environment. A very simple definition of this is given by Hoppe and Breitner (2003), where they define e-learning as a learning which is supported and/or made possible by the use of modern ICT and computers. To Carliner (2004), e-learning is the educational material that is presented on a computer. According to Ong, Lai and Wang (2004), it is the instructional content or learning experience delivered or enabled by electronic technologies. Khan (2005) defined e-learning as the online instruction and an innovative approach for delivering instruction to a remote audience using the web as the medium. Laurillard (2006) has defined e-learning as the use of any of the new technologies or application in the service of learning or learner support. While to Newman (2008), it is the usage of modern ICT to deliver learning and training programs. Whatever the definition may be but the key elements in e-learning are lecturer, content, students, place, time and interactivity. Hence, an e-learning process comprises conceptual and physical components and procedures that should be both standardized in terms of procedures and technologies. Therefore, if developed properly, online classes may increase efficiency and course productivity.

Keshavarz, Rahimi, and Esmaili (2013) concluded that e-learning has a positive impact on academic achievements of students. Zarie-Zavaraki and Rezaei (2011) in their study at the e-learning center in Khaje Nasir Toosi University concludes found that the use of e-portfolio significantly improved students' attitude, motivation and academic achievement. Mahmood, Mahmood, and Malik (2012) discovered that teaching-learning process improves students learning and creativity. Zare, Sarikhani, Sarikhani, and Babazadeh, (2015), also found that learning and recollection of students who were educated to multimedia methods, is more than learning and recollection of students who were educated in the traditional methods. The use of electronic technologies has led to the development of educational opportunities and helps students develop their skills. According to studies, the evidence shows that e-learning can have a profound and positive impact on learners'

involvement, positive attitudes of teachers, personalized learning, and learners' creativity (Magnoson, T., Dall, A., and Chiland, A.T., 2010). Negash and Wilcox (2008), quoted in Zare, Sarikhani, Salari, and Mansouri (2016) suggested that there are six different types of e-learning, as thus;

i. E-learning with Physical Presence and without E-communication (face-to-face)
ii. E-learning without Presence and without E-communication (self-learning)
iii. E-learning without Presence and with E-communication (asynchronous)
iv. E-learning with virtual Presence and with E-communication (synchronous)
v. E-learning with occasional Presence and with E-communication (blended/hybrid-asynchronous)
iv. E-learning with Presence and with E-communication (blended/hybrid synchronous)

Review of studies conducted in the field of e-learning application and its impact on learning and creativity suggests that the use of this teaching method in the teaching-learning process can lead to the effectiveness of training. Emergence of new theories of teaching and learning has made the education to shift from being teacher-oriented to being student-oriented. Moreover, development and evolution of new communication devices has enabled modern man to use modern methods of teaching and learning and get free from time and space barriers and keep on learning in any time and place according to his needs and demands (Hosseini; Seyed-Saeed, Nasram, Esmailpour, and Ashoori, 2015). In essence, the acquisition, storage/preservation and dissemination of apt, relevant and current information resources to users at this period of lockdown via the intuitional repository with proper accessibility (internet connectivity) to these resources will inevitably lead to optimal utilization of these resources, and will in turn give increase in productivity (improved academic performance and quality research).

## Challenges of Institutional Repository (IR)

The metamorphosing of traditional print publication to digital sources has provided Nigeria educational institutions especially research based institutions with apt opportunity to showcase their literature and research works to the outside world thus giving them wider visibility. Literature indicates Europe, America and Australia have a higher adoption rate of institutional repositories compared to other continents across the globe (Abrizah 2010; Okumu, 2015; Cullen and Chawner 2010). Contrary to the developed and Asian countries, African countries have recorded a low adoption rate of institutional repositories (Ezema, 2013; Kathewera, 2016; Fasae, Lamyoh, Esew, Alanyo, & Holmner, 2017). However, it may be surprising to observe that some academic and research institution in Nigeria are yet to take advantage of the benefits provided by institutional repositories due to some plain reasons. Existing literatures identified some of the issues responsible for the sluggish acceptance of

institutional repository in the country, such as lack of knowledge or awareness of open access institutional repository, poor state of information and communication technology, inadequate advocacy for institutional repositories, poor or inadequate funding, copyright and intellectual property rights. Anenene, Alegbeleye & Oyewole (2017) similarly supported that, other critical adoption factors in Africa and most developing countries include ignorance of the benefits of institutional repositories, awareness, understanding of self-archiving services and ignorance of publishers' policy. In the same vein, Pickton & Barwick (2006), stated the implications and potential barriers to the successful establishment of an institutional repository as thus:

- Difficulties in Generating Content: A successful IR depends on the willingness of authors to deposit their works voluntarily and there may be local barriers and hindrances to overcome them. There are acknowledged difficulties in generating content, especially at the beginning. Unless the value of an IR can be demonstrated quickly, the organizations long-term commitment to the project may began to wane. The best way to prove the enduring value of the IR and to ensure its long- term survival is to quickly populate it (Gibbons, 2004).

- Right to Management Issues: Sometimes researchers are apprehensive about in infringing publishers copyright and lack adequate awareness about their own intellectual property rights. They may be uncertain about making their work available online before it is published by a traditional publisher.

- Working Culture Issues: Contributing content to user- generated or 'self-service' sites is time consuming and time is something which academics often lack. They may be willing to contribute content but reluctant to do it themselves. This calls for mediated deposits service for them.

- Policy Issues: Experiences suggest that an IR will only function to its capacity when a mandate is in place to populate it but clearly researchers can react negatively to any suggestion of compulsion. Lynch (2003) has cautioned that an IR should not become a tool for enforcing administrative control over academic work.

- Lack of Incentives: In the absence of any incentive academics feel reluctant to provide even bibliographic details of their scholarly output especially when they know that incentives are available in other institutions. et

- Cost: Initial financial cost for an open source software adopted by most institutions for creating IRs is not high but the recurrent costs, especially staff costs (i.e time spent drafting policies , developing guidelines, publicizing , training, supporting users and creating metadata, specialists IT consultancy) may be significant.

## Conclusion and Recommendations

So far, this work has highlighted some of the issues that affect the development of institutional repository in our contemporary academic institutions to include, lack of awareness of the open access publishing in academic and research institutions in developing countries, inadequate information and communication

infrastructure, lack of proper funding, copyright and intellectual property rights. In the light of these observations, the following recommendations are proffered:

With regards to the issue of awareness and advocacy, it is highly recommended that organizing series of conferences and capacity building workshops to educate and train stakeholders in academic and research institutions in Nigeria will go a long way in curbing the rate of ignorance amongst stakeholders on the existence and benefits of open access publishing which is embedded in institutional repository. In this way their knowledge of institutional repository will be enriched and they will be in a better position to advocate for change in policies within their institution and at national level that will promote exchange of robust information resources via institutional repository. This will create a conducive environment that will nurture the development and growth of institutional repository in Nigeria.

The two major issues in ICT relates to Internet bandwidth and electricity supply to power the ICT infrastructure. With regards to the first, the short term solution will be to support initiatives such as the Bandwidth Consortium (BWC)) aimed at subsidizing the cost of internet bandwidth in academic and research institutions in Nigeria such as Nigeria Research and Education Network (NgREN) spear headed by Nigeria Universities Commissions (NUC) basically for Nigeria Universities (both public and private), and also foreign organizations like the West and Central Africa Research and Education Network (WACREN). Besides, Christian (2008) suggested that, the long-term solution in this area should take the form of increased backing for international optic fibre infrastructure as well as an open access policy to the project so as to provide equal access to all bandwidth providers. To deal with the issue of electricity supply to power ICT infrastructure, there is need to fund research into development and implementation of efficient power generating alternatives to power ICT facilities used in the deployment of institutional repositories.

It was also observed that the development of institutional repository in Nigeria as well as most developing countries is a capital intensive project. This issue is worsened by the diminution of budgetary allocation from government or proprietors to the educational sector. There is need for increased funding from international donor agencies to help academic and research institutions in Nigeria to uplift the state of their ICT infrastructure. Other alternative sources of funding that could be researched into includes corporate entities like telecommunication companies operating in the country.

As regards copyright issues, it is highly recommended that authors within the region should be educated on their rights in relation to their intellectual output. This is very important as these authors continue to sign away their legal rights without knowledge of the legal implication of the act. If this problem is not tackled at the moment, their institutions will encounter another difficult problem in filling their repositories should they succeed in developing one sometime in the future.

# Reference

Abrizah, A. (2010). Populating institutional repository: faculty's contribution and roles of librarians. *BACA: Jurnal Dokumentasi Dan Informasi, 31(1): 27-50.*

Anenene, E.E., Alegbeleye, G.B. & Oyewole, O. (2017). Factors contributing to the adoption of institutional repositories in universities in south-west Nigeria: perspective of library staff. Library *Philosophy and Practice (e-journal), 1508.* Retrieved from file:///C:/Users/UNIVER~1/AppData/Local/Temp/Factors_Contributing_to_the_Adoption_of_Institutio.pdf

Barton, M. R., & Walker, J. H. (2004). *Creating an Institutional Repository: LEADIRS Workbook.* Cambridge: MIT Libraries. Retrieved from https://dspace.mit.edu/bitstream/handle/1721.1/26698/Barton_2004_Creating.pdf?sequence=1&isAllowed=y

Barwick, J. & Pickton, M. (2006). A librarian's guide to institutional repositories. *eLucidate, 3(2):3 - 9.* Retrieved from https://dspace.lboro.ac.uk/2134/1122

Carliner, S. (2004). An Overview of online learning (2nd Edition). Amherst, MA: Human Resource Development Press

Christian,G.E. (2008). Issues and challenges to the development of open access institutional repositories in academic and research institutions in Nigeria. Retrieved from http://ssrn.com/abstract=1323387

Crow, R. (2002). The case for institutional repositories: A SPARC position paper. Retrieved 30 September 2008 from http://www.arl.org/sparc/bm~doc/ir_final_release_102.pdf

Cullen, R. & Chawner, B. (2010). Institutional Repositories, Open Access, and Scholarly Communication: A Study of Conflicting Paradigms. *The Journal of Academic Librarianship, 37(6): 460–470.* Retrieved from file:///C:/Users/UNIVER~1/AppData/Local/Temp/CullenChawner.Institutionalrepositories.JAL.Dec2011pdf-1.pdf

Davis, F. D.; Bagozzi, R. P.; Warshaw, P. R. (1989).User acceptance of computer technology: A comparison of two theoretical models. *Management Science 35(8):982–1003.* Retrieved from file:///C:/Users/UNIVER~1/AppData/Local/Temp/1989-DavisBagozziWarshaw.pdf

Dhanavandan, S. & Tamizhchelvan, M.C. (2013). A Critical Study on Attitudes and Awareness of Institutional Repositories and Open Access Publishing. *Journal of Information Science Theory and Practice, 1(4): 67-75.* Retrieved from file:///C:/Users/UNIVER~1/AppData/Local/Temp/A_Critical_Study_on_Attitudes_and_Awareness_of_Ins.pdf

Dhiman, A.K. (2011). Institutional repositories in eLearning. *International Journal of Computer Applications. 2012(1):14-17.* Retrieved from https://research.ijcaonline.org/winbis2012/number1/winbis1004.pdf

Ezema, I.J. (2013). Building open access institutional repositories for global visibility of Nigerian scholarly publication. *Library Review, 60(6):473-485.* Retrieved from file:///C:/Users/UNIVER~1/AppData/Local/Temp/Institutional Repositories.pdf

Fasae, J.K., Larnyoh, W., Esew, M., Alanyo, B. & Holmner, M. (2017). Institutional repositories and heritage materials in selected institutions within three African countries. Library *Philosophy and Practice (e-journal), 1603.* Retrieved from https://repository.up.ac.za/bitstream/handle/2263/65789/Fasae_Institutional_2 017.pdf?sequence=1&isAllowed=y

Gani, E. & Magoi, J.S. (2014). The emergence of digital libraries service in northwest Nigerian universities: challenges and prospects. *Library Philosophy and Practice (e-journal), 2014(10).* Retrieved from https://digitalcommons.unl.edu/libphilprac/1184/

Hoppe, G. & Breitner, M., Business Models for E-learning. Conference proceedings of the E-learning: Models, Instruments and Experiences", Multikonferenz Wirtschafstinformatik, Essen, Germany. 2004. Retrieved from http://www3.wiwi.unihannover.de/Forschung/Diskussionspapiere/dp287.pdf

Hosseini, T., Seyed-Saeed, S., Nasram, Esmailpour, M. & Ashoori, J. (2015). A comparative study of Web-Based Education and Cognitive and Meta Cognitive Strategies on Educational Progress and Self-Efficacy of Nursing Students of Islamic Azad University. *Pishva, Media Elec. Learning Magazine,* 6 (2), 17-27.

Ifidon, S.E. (1997). *A guide to reference services.* Lagos: St. Michael.

Kathewera, H. F. (2016).The role of an institutional repository in the creation and use of local content by staff and students at Lilongwe University Of Agriculture and Natural Resources, Malawi. Retrieved from http://ir.mu.ac.ke:8080/xmlui/bitstream/handle/123456789/779/Herbert2.pdf?s equence=1&isAllowed=y

Keshavarz, M., Rahimi, M. & Esmaili, Z. (2013).The Effect of E-Learning on Educational Progress of Students' Medical Science of Isfahan University. *Torbat Heydarieh Uni. of Medical Science periodical, 1(2), 13-22.*

Khan, B.H. (2005). *Managing E-learning Strategies: Design, Delivery, Implementation and Evaluation.* Hershey,USA: Information Science Publishing.

Lynch, C.A. (2003). Institutional Repositories: Essential Infrastructure for Scholarship in the Digital Age. Portal: Libraries and the Academy. 3 (2): 327–36. Retrieved from https://www.cni.org/wp-content/uploads/2003/02/arl-br-226-Lynch-IRs-2003.pdf

Laurillard, D. (2006), "Ashwin, P. (ed) (2006) *Changing Higher Education: The Development of Learning and Teaching.* London: Routledge.

Magnoson, T., Dall, A., and Chiland, A.T. (2010).Compact Set of National and International Documents in the Field of Education. Inclusive Education Coordination Working Group [Internet]. Retrieved from: http://www.unesco.org/education/pdf/SALAMA_E.pdf.

Mahmood, A., Mahmood, S. T., & Malik, A. B. (2012). A comparative study of student satisfaction level in distance learning and live classroom at higher education level. *Turkish Online Journal of Distance Education (TOJDE),* 13(1): 128-136.

Mgonzo, W.J. and Yonah, Z.O. (2014). Towards a Web-based Digital Repository: Identification of Needs and Behavior of Users. *International Journal of Computer Applications,* *104(16):* *1-7.* Retrieved from file:///C:/Users/UNIVER~1/AppData/Local/Temp/TowardsaWebBasedDigital Repository.pdf

Negash, S. & Wilcox, M.V. (2008). *Handbook of distance learning for real-time and synchronous information technology education.* USA: Information Science Reference.

Newman, M. (2008). Advantages and Disadvantages of E-learning. Retrieved from http://www.newman.ac.uk/Students_Websites/~m.m.friel/.

Okumu, O. D. (2015).Adoption of institutional repositories in dissemination of scholarly information in universities in Kenya with reference to United States international university-Africa: Nairobi, Kenya; University of Nairobi.

Omeluzor, C.S. (2014). Institutional Repository (IR) Awareness and Willingness of Faculty Staff to Deposit Research Work: A Study of Faculty Staff in Selected Public and Private University in Nigeria. *Open Access Library Journal,* *1(e1139).* Retrieved from file:///C:/Users/UNIVER~1/AppData/Local/Temp/InstitutionalRepositoryIRA wareness.pdf

Ong, C.-S., Lai, J.-Y. & Wang, Y.-S. (2004). Factors affecting engineers' acceptance of asynchronous e-learning systems in high-tech companies. Information & Management, 41 (6), 795-804.

Pickton, M. & Barwick, J. (2006). *A librarian's guide to institutional repositories.* Loughborough/UK: UKeiG and Contributors. Retrieved April 24, 2008 from http://magpie.lboro.ac.uk/dspace/handle/2134/1122

Prabhakar, S.V.R. and Manjula Rani, S.V. (2018). Benefits and perspectives of institutional repositories in academic libraries. *Scholarly Research Journal for Humanity Science & English Language.5(25):6904-6909.* Retrieved from http://oaji.net/articles/2017/1201-1529139900.pdf

Sarker, F., Davis H. & and Tiropanis, T. (2010). The role of institutional repositories in addressing higher education challenges. Retrieved from https://eprints.soton.ac.uk/271694/1/The_Role_of_Institutional_Repositories_ in_addressing_Higher_Education_Challenges.pdf

Scholastica, U.C. & Dike, V.W. (2017). Academics' Attitudes toward the utilization of institutional repositories in Nigerian universities. *Libraries and the Academy,* 17(1):17-32.

Silas Marques De Oliveira, "Benefits and Challenges of OA and Institutional Repository Implementation in the Seventh-day Adventist University Libraries: An International Perspective". *Proceedings of the LATUL Conferences.* Paper 6. Retrieved from https://core.ac.uk/download/pdf/10239762.pdf

Ware, M. (2004). Institutional repositories and scholarly publishing. *Learned Publishing, 17(2):115-124.*

Zare, M., Sarikhani, R., Sarikhani, E. & Babazadeh, M. (2015). The Effects of Multimedia Education on learning and Retention in a Physiology Course. Media Electronic Learning Magazine, 6(1), 32-38.

Zare, M. , Sarikhani, R. , Salari, M. , & Mansouri, V. (2016). The impact of E-learning on university students' academic achievement and creativity. Journal of Technical Education and Training (JTET), 8(11):25-33.

Zarei –Zavaraki, E. &, Rezaei, I. (2011). The Impact of using electronic portfolio on attitude, motivation, and educational progress of students' Khaje Nasir Toosi University. Educational Measurement periodical, 2(5), 67-96.