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**DEVELOPMENT OF INSTITUTIONAL REPOSITORIES IN ACADEMIC AND
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ABSTRACT

As knowledge is on the rise and research outputs from academic and research libraries continue to increase, there is a need to create access to some information materials that have no copyright restrictions so that information users can gain unhindered access electronically to institutional resources beyond where it physically domicile for researchers benefits. The development of an Institutional Repository for academic and research libraries is the way forward because the process makes possible visibility of localized scholarly contents on web platform and also provide open access to the resources. In Nigeria, the establishment of the Institutional Repository in some academic and research institutions has helped to reduce researchers and students challenges of accessing information in institutions that are far off there residing location by them travelling down to request for materials that are physically domiciled in the institution that house it. This is a big challenge that can affect researcher effort in gathering materials that they can cite for their research work. With more establishment of Institutional Repositories, access to localized information domiciled in the remote institution can be easily access by visiting the institutional library online platform to retrieve the material. Effort as this will help to lesson researcher burden in accessing raw material and enhanced quality of research outputs in Nigeria. The paper explores the relevance of developing Institutional Repositories for open and unrestricted access to localized resources. Further, mentions the university's and research libraries roles in developing institutional repositories, types of software to be used for the development was discussed and the hardware requirement alongside. The copyright infringements was addressed and the way forward to ensures that contents to be uploaded into the provision are checked using copyright checker called Sherpa Romeo.

Keyword: Institutional Repository, open access, information material, academic and research libraries

INTRODUCTION

There is a tremendous increase in knowledge as of result of the information explosion due to advancement in internet technologies. With the rapid deployment of information and communication technologies, libraries worldwide are moving from places to spaces; redesigning their services and information products; adding value to their services; and satisfying the changing information needs of the user community. This has led to people having unrestricted access to local and remote information with their mobile devices and computers. Despite this development researchers still find it difficult to gain access to information materials that are domicile in certain institutions. In developing countries like Nigeria, research students will have to spend huge resources from their pulse to travel down to some of these academic libraries and research libraries to source for information they need for their research work. Preliminary investigation shows that some of these information materials are still in hardcopy form and has not been digitized. As a result, having access to this information in their state is practically impossible. Part of the emerging role of academic libraries and research institutions in the development of institutional repositories that captures and facilitate access to electronic information (Eromosele, 2019). An institutional repository is a set of services offered by a university and research institution, populated by the staff, researchers, students and other members of the institution and to be consulted by both members of the university and the outside world (Ogbomo and Muokebe, 2015; Nwachi and Idoko, 2021). Institutional repository setup can be intended to collect and preserve in digital form, the intellectual output of an institution such, as Theses, Dissertations, Seminar papers, Conference proceedings, Preprints, Post-prints, working papers, or technical reports. It can also contain the institution digital library, the collection of printed and manuscript documents, public archives, and graphic material,

originating from the institution or elsewhere, that the institution has converted to digital form for use within the university, and generally available to anyone. Academic and Research libraries are the heart of institution where organized information are stored and their roles are to support the objectives of learning, teaching and research of their parenting institutions by providing them with its rich collection of resources.

RELEVANCE OF DEVELOPING INSTITUTIONAL REPOSITORIES

There is a rise and rapid increase in the volume of scholarly content deposited in academic and research libraries (Eromosele, 2019). These scholarly works are the research outputs of academics and students from academic and research libraries host institutions. The relevance of institutional repositories is to create online visibility to digital resources, support open access initiatives and providing an alternative source to scholarly content as a result of rising costs in journals. Any limitation of access, whether deliberate or accidental, will reduce the ability of the libraries to fully achieve their primary role of meeting the library and information needs of the community they are serving (Nwachi and Idoko, 2021). By placing research work in an Institutional Repository and not just fee-based databases, scholarly journals or books, academics and students research work is likely to be used and cited more (Kunle, 2015). Therefore, the development of an institutional repository will provide academic and research libraries with a high level of visibility into their libraries' digital electronic resources (Oguche, 2018). In Nigeria, considerable numbers of academic and research libraries have embraced this laudable initiative and have made huge efforts to develop an institutional repository and uploading their digital contents on it (Eromosele, 2019). This serves as a tool for improvement and development, especially, in a situation where attention is drawn to the academic contents and ways of preserving them for future use (Umar, Musa and Aliyu, 2014). The development of institutional repositories has provided academic and research institutions with a very high level of visibility of the library digital resources electronically. As such, teaching, learning and research is widely enhanced in society at large today. This initiative is aimed at bringing the knowledge society to a state of free access to all kinds of information and learning material using the Internet and Information and Communication Technology (ICT) tools (Ogbomo and Muokebe, 2015).

THE UNIVERSITY'S AND RESEARCH LIBRARIES ROLES IN DEVELOPING REPOSITORIES

Institutional repository development involves a lot of effort and collaboration. It is expected that once the service up and running, the contents in the repository should be robust enough such that researchers that want to use the provision should be able to find contents that meet their information needs. The population of the institutional repository is therefore the responsibility of academics who constantly engage in researches. Their wealth of intellectual outputs will constitute the contents that should be uploaded into the repository. Therefore, the institution must engage and train them on how to upload into the provision from their offices and any location of their choice by accessing the provision with login credentials. In some academic institutions in Nigeria, faculties are compelled to upload all of their local published articles into the university's repository as part of the aggressive approach of populating the provision. From preliminary findings, it was discovered that faculties in the University of Ilorin can only collect their letter of promotion when they show proof of uploading into the repository.

The librarians of the academic and research libraries repository should be the administrator of the repository and must be responsible for uploading the intellectual properties such as theses & dissertations, question papers, conference proceedings, speeches etcetera into the setup. Some material will have to undergo digitization because of its raw state to get the contents in softcopy forms. Digitization is the process of converting hardcopy materials into softcopy using some specialized scanners that are specially designed for book scanning. Resources in raw forms should be converted to digital forms. The information materials in the libraries are usually in some analogue format (e.g. printed books, manuscripts

etc.). It is expected that academic and research libraries convert these materials to digital form through digitization and making them available on institutional repositories so that they can be accessible. The other form of resources that should constitute the contents in the repository is the "born-digital" materials originally produced in machine-readable digital form (e.g. projects, theses, dissertations, seminar reports, conference proceedings, inaugural lectures e-books, e-journals, online databases, digital photographs, websites, and multimedia etc.) and needs no digital conversion (Pandey and Misra, 2014). It is easier to work with the born-digital contents because they do not have to undergo a complete digitization process. Librarians in the academic and research centres must take the lead and should be in charge of the sustainability of the service by engaging their systems librarian; providing regular training to teaching staff and students and as well training and re-training staff of the libraries that are critical to the operations, choice of software, hardware requirement and policy development as a guide for operating the service.

To corroborate the effort of developing an Institutional Repository is very crucial for the library management to employed an ICT technical staff that will be domiciled in the library to manage the setup. This is because the service will be well sustained if such intervention is put in place or personnel in the library should be trained to take up the task of managing the setup and resolving minor or major technical issues for smooth and interrupted operations.

CHOICE OF SOFTWARE FOR THE DEVELOPMENT OF INSTITUTIONAL REPOSITORY

For the development of an Institutional Repository in Nigeria, free and open-source software are commonly used. The most commonly used in the creation of repositories are Dspace, and E-print and seldom Fedora, and Greenstone are used as well. This software makes online visibility of institutional repositories digital contents possible. The choice of adoption of any of the above software usually depends on how user-friendly it is found to be in its usage. The friendliness of the software determines the user acceptability of the service. Open-source software does not require propriety rights and is freely available online for use. This is due to the open-source nature, the robustness of the metadata, relatively easy to set up as well as amenability to customization. To buttress this, Igwe (2014) in his view stated that when undertaking the responsibility of establishing institutional repositories, libraries have the opportunity to investigate open-source software options and possibly adopt one that is globally used. Fox (2006) encourages library participation in the general open-source movement based on the motivation to be innovative, solve unique problems, add to a growing body of knowledge, and use resources to their best advantage. Libraries and the open movement mesh together logically. Providing access to resources and information at little or no charge to users is historically an essential role that libraries have played within their communities.

Different software can be adopted in the development of the repository but the choice of the software to be adopted will be determined by the library's management. This is then followed by hardware specifications that will match will the desired project. Other software to be considered a matter of choice for the development is the operating system that act acts as a window for the development and in which the software will be configured. In Nigeria, most servers' setups are done with Linux packages and most systems librarians will usually opt for Ubuntu which is an offshoot of Linux. Linux packages are robust, not easily susceptible to the virus, secured and give one the opportunities to explore without confinement. Most of its packages has been the darling of servers' configuration in most universities around.

Hardware Requirement For The Setup

The hardware is the physical components that are required to drive the software component used in developing an online Institutional Repository. The hardware in this case is the server and peripherals. A server with 32 Gigabyte RAM and a 2 Terabyte Harddrive will be a good choice for academic libraries with a good processor speed. The 32Gb RAM will provide a wide memory space to process data during heavy traffic by users of the resource and can be later upgraded to 64Gb RAM when traffic and usage increase

over time. The 2 Terabyte can be split into two, where 1 Terabyte is used to store the digitized contents to be accessed and the other 1 Terabyte is used as a mirror for backup of data in the server.

The research library does not have to use a higher server specification because the volume of information materials are generally lower when compared to academic institution libraries that generate more intellectual content. As such an 8 Gigabyte RAM minimum and 1 Terabyte Hard drive is sufficient for the development of their Institutional Repository.

RELIABLE INTERNET PROVISION

Internet access is crucial to the success of Institutional Repository development. A good Internet bandwidth subscription is required. A minimum of 5Mbps bandwidth with Live IP is required for the server to be seen online. Academic institution libraries, will need more bandwidth and preferably on STM-1 will be a good recommendation with a provision of Public IP from their Internet Service Provider for setting up the server and making it Live to the public for both local and remote access.

POWER BACKUP

No matter the condition of the power supply whether good or bad, it is important that there is a backup for server setup. Computer experts say Computer Servers are better placed on the continuous power supply as this will ensure steady current supply to the equipment and equipment damage through power surges will be minimized (Lawal-Solarin and Allison, 2018). This is because power cuts can happen anytime due to unforeseen circumstances or malicious attacks on power facilities. If it happens, the server will go down and a short or long time downtime to the service operations will be interrupted. Consistent abnormal shutdown of servers can damage the hard drive and this can lead to data loss where there is no proper backup. A good way out is to have a backup that can last up to 12 hours in which the power supply will have been restored. In this case, a 2 Kva Solar Inverter and commensurable 200Amps of inverter batteries are needed for the development.

SEARCH ENGINE OPTIMIZATION

After the institutional repository has been set up and is running with the choice of software adopted, the setup must be configured for Search Engine Optimization because the software code building process might not include such configuration. According to Zilincan, (2015), Search Engine Optimization is a series of modifications and techniques, which make it easier for search engines to crawl, index, and understand the content of a website. Before optimization itself, it is crucial to know the users, their information needs, and their capabilities. It is impossible to make a search engine optimization for every word on the repository archives; therefore, it is important to select some keywords which most accurately represent the contents uploaded into the repository. Moreover, optimization is always performed according to a specific query, which is likely to be searched by a user. Therefore, if an institutional repository is a setup without these features, the digitized contents that are uploaded on the repository will not be by search engine queries.

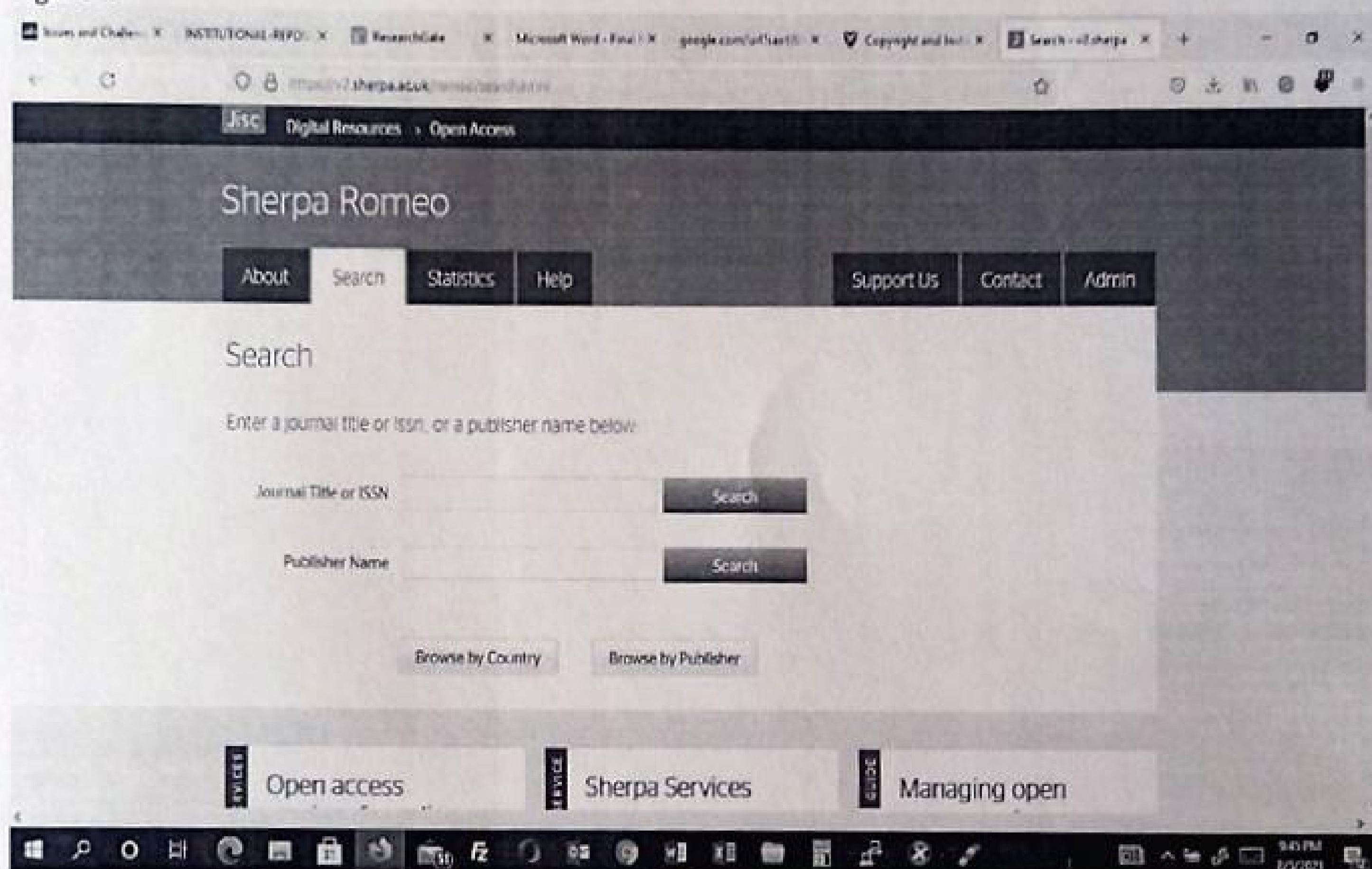
COPYRIGHT ISSUES CONCERNS IN THE DEVELOPMENT OF INSTITUTIONAL REPOSITORY

The copyright law forbids scholarly work published on restricted journals to be recirculated on a medium such as an institutional repository that allows open access. This is to secure times for the Authors and Inventors the exclusive Right to their respective writings and discoveries (Macklin, 2013). According to Oluwasemilore, (2013), there are provisions for "fair use" "Fair Dealing" in some jurisdictions, In Nigeria, this is provided for in the Second Schedule, Section 646 under copyright law, and the nature of the medium lends itself to multiple uses either formally through libraries or informally through borrowing and browsing. On the Internet, most scholarly journals are in restricted subscribed-based journals and users are often required to pay to access this article of their choice and such article when retrieved is not allowed to be uploaded on any online platforms for open circulation. However, uploads into the institutional repository must be controlled and librarians in academic and research libraries must be well informed to be able to checkmate the contents that uploaded to them from faculties and students in

order, not to bridge copyright infringement. A proper way to go about this is the use of the copyright checker "Sherpa Romeo" to check the status of intellectual contents to be uploaded into the repository. Sherpa Romeo is an online resource that aggregates and analyses publisher open access policies from around the world and provides summaries of publisher copyright and open access archiving policies on a journal-by-journal basis. Every registered publisher or journal held in Romeo is carefully reviewed and analysed by our specialist team who provide summaries of self-archiving permissions and conditions of rights given to authors on a journal-by-journal basis where possible (<https://v2.sherpa.ac.uk/romeo/about.html>). Since Sherpa Romeo is an online website, it is therefore easy to use and a recommended remedy to avoid copyright infringement to publishing content for both academic and research libraries in Nigeria.

The Sherpa Romeo online page is depicted below:

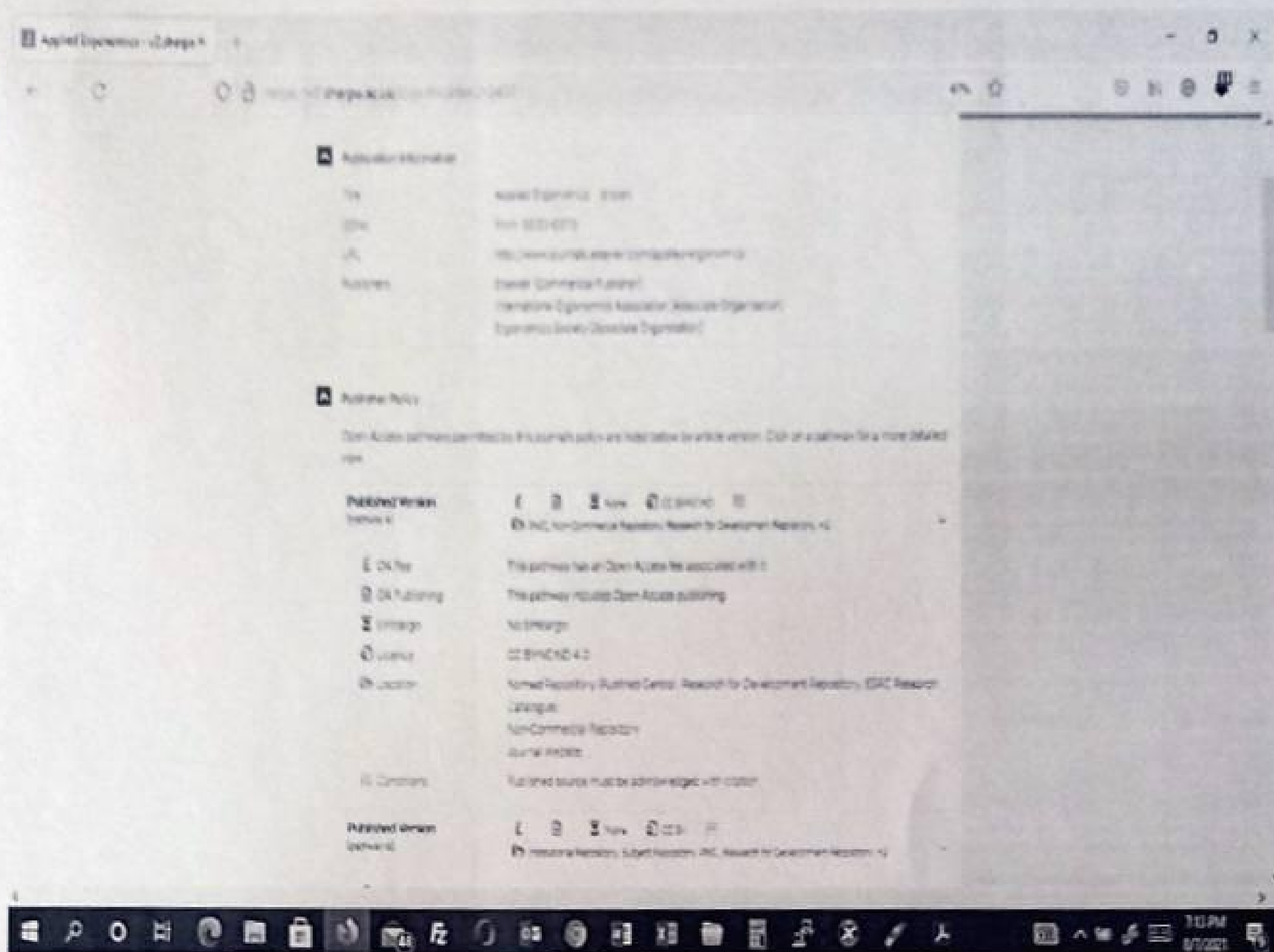
Figure 1.



Source: <https://v2.sherpa.ac.uk/romeo/search.html>

A typical journal title "Applied Ergonometic", search for copyright status is displayed below:

Figure II:



Output Source: <https://v2.sherpa.ac.uk/id/publication/12437>

The output condition for the journal-title "Applied Ergonomics" state that the Published source must be acknowledged with a citation with an Open Access associated with it.

POLICY ENACTMENT

A policy statement is needed to serve as a rule that guides the operation of the service after the development. A policy will serve as a reference point and guide for implementing the process (Nneji, 2018). It should contain the objectives of the institutional repository project as good objectives is crucial to the success of a new initiative. Policy enactment will enable the librarians to properly monitors the process and ensures that contents that are specified in the policy only come to the repository. With this in mind, the repository manager can reject submissions from academics and students that are not in tandem with the objectives of the operations. The policy enactment should be specific on who are to be the users of the uploaded contents and this will also lead to ensuring that the contents on the repository are robust to meet the wider information needs of the users. The advertising of the resource available is also crucial so that users can know about the service and this should be clearly stated in the policy. One may consider sending out a survey to the project's intended audience to learn how they are currently using the material, and how they might use it differently if it was available on an online institutional repository. It may be helpful to contact other institutions that have digitized similar collections and had made them available on their institutional repository and learn from their successes and failures. Training and retraining of staff should be capture in policy so that the managers could flow with new trends in the development and operations of an institutional repository.

CONCLUSION

Libraries are providing digital collections and services, such as institutional repositories, online databases, e-books, e-journals, library websites, online public access catalogues, the Internet and the intranet because of the espousal of information and technologies tools to library operations. The development of an institutional repository is the modern approach to give access to the intellectual properties of an institution. Though, almost every academic and research libraries in Nigeria will allow you gain access into their library to access their information on proper introduction and necessary identification card, there is need to remove barrier to accessing localized information through the provision of an online institutional repository. Institutional repository are the face index of academic and research libraries and help to show the status of the strength of the library and generally help to put the institution on a positive position on the global mark while helping to improve its web rank.

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