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DIGITAL REPOSITORY FOR PUBLIC ARCHIVES: THE PUBLIC RECORDS AND ARCHIVES ADMINISTRATION DEPARTMENT OF GHANA IN FOCUS.

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1.0 ABSTRACT

There is increased growth of digital repositories the world over. Many libraries, academic institutions, governmental and archival institutions are establishing and implementing institutional repositories. In Ghana, despite the growth of institutional repositories in some of the universities, the Public Records and Archives Administration Department (PRAAD), which holds the country's cultural heritage and history still, manages manual records. Day in and day out archives in their custody deteriorate due to frequent handling and the bad state in which the repositories are. There are no backups for the documents, thus, the archives that deteriorate beyond repairs are completely lost to future generations.

The purpose of the study is to conduct a feasibility study on the establishment of a digital repository at PRAAD.

Ten (10) heads of units participated in the study. A qualitative research design was used to carry out the study. A semi-structured interview was used to extract information from respondents. This paper reveals how beneficial digital repositories are to institutions that have them, especially its benefit to PRAAD. It reviews some challenges that hamper PRAAD from having a digital repository and suggests ways of getting PRAAD and its staff ready for a digital repository.

KEYWORDS: Digital repositories, institution repositories, archives, records, PRAAD

2.0 The Public Records and Archives Administration Department (PRAAD)

In Ghana, PRAAD is the national institution charged with the task of managing public records (Akussah, Dzandu & Osei-Adu, 2012). The beginning of the National Archives of Ghana, the predecessor of PRAAD, dates back to 1946. The National Archives of Ghana was borne out of government effort to rescue its records from damage, confusion, and loss (Akita, 1991).

In 1997, the Public Records and Archives Administration Act no.535 was passed. The name of the National Archives was changed to the Public Records and Archives Administration Department and was charged with the responsibility of ensuring that effective and efficient management of records in the public institutions was maintained (PRAAD Manual, 2012).

There are three functional divisions in PRAAD. These are archives administration, records management, and training and research (PRAAD Organisational Manual, 2016). The records management division comprises two units namely; the records office review section and the records centre. The archives division is made up of editorial, reference services; archival repositories, reprographic services, and preservation services. There is also a training and research division. PRAAD also has six regional offices set up in Kumasi, Koforidua, Sekondi, Ho, Tamale, and Sunyani (PRAAD, 2004).

3.0 Introduction

The latest advances in Information and Communication Technology (ICT) has made it possible for information or records kept in paper format to be digitized and stored in a system known as a digital repository and made available to the general public (Abd-Manaf, 2008; Nyagadza, 2022).

The term ‘digital repository’ has several meanings that are widely debated (Semple, 2006). Various phrases such as digital archive, trusted digital repository, open-access repository, institutional repository, and institutional archive appear in literature with researchers attempting to define them showing their distinctiveness from the other (Mittal & Mahesh, 2008).

According to Semple (2006), “digital repositories offer a convenient infrastructure through which to store, manage, re-use and curate digital materials. A digital repository is a ‘means of managing, storing, and providing access to digital content’ (JISC InfoNet, 2010). The phrase ‘institutional repositories’ according to Chisenga (2006) refers to digital repositories that are closely linked to scholarly communication, universities, and research institutions. Yeates (2003) also defines an institutional repository as “the collective intellectual output of an institution recorded in a form that can be preserved and exploited.” Lynch (2003) describes an institutional repository as a “set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its members.” Hixon (2007) however is of the view that Lynch’s definition should have the word ‘University’ removed to make the definition more accurate.

The Consultative Committee for Space Data System (2002) outlines the twofold purpose of a digital repository. These include; preserving information over a period of time and delivering products and services derived from the preserved information, to satisfy the needs of its designated user community. These services offer various benefits to the national archives, researchers, teaching academics, learners, institutions, the global community, and the wider world (JISC

InfoNet, 2010). The benefits derived from digital repositories are so enormous, that no institution whose intent is to enhance its profile and functions will want to deprive itself of having one (Swan, 2008).

Digital repositories increase the visibility and prestige of institutions that have them. Digital repositories also make searching and retrieving contents easy and fast (JISC InfoNet, 2010). They save repository staff the stress of going through dusty materials when searching and retrieving records from the archival repositories. Last but not the least, digital repositories make searching for archival contents easy both locally and globally with users being able to access a particular collection at the same time and at different locations. This may not be possible with the use of paper records (Mason, 2012; Kim & Oh, 2020).

According to Otu & Asante (2015), the term archives can be used in three different contexts. Firstly, it can be used to refer to the materials generated out of organizational activity. Secondly, it can be used to refer to the building in which the materials are stored and lastly, archives can be used about the institution that manages the archival materials. Archives also serve as a means through which culture is passed on from one generation to another (Foster, Benford & Price, 2013).

As cited by Otu & Asante (2015), Roper & Miller (1999) define archives as ‘those records that are worthy of permanent retention because of their enduring value as evidence or for research. ‘Archives are considered ‘memory institutions’ because they hold historic records of scientific and cultural heritage, people, communities, institutions and governments (Dempsey, 2000). Akotia (2003) asserts that archives provide a reliable and authentic knowledge base, which enables the past, be known and understood. Archives play an important role in society. The National Archives of Canada (2003) outlines some benefits derived from archives as:

1. They serve as society’s collective memory by providing evidence of the past, promoting accountability and transparency of past transactions.
2. Archives ensure that records that are historically significant are made available for teaching purposes, research, building plans, publications, plays, and legal proceedings, just to mention a few.

Introducing a digital repository into archives is vital because it opens up and offers the outputs of the archives to the world (Swan, 2008). A digital repository holds digital content, which becomes easily accessible to the public anywhere at any time (Abd-Manaf, 2008). Establishing a digital repository in the archives also helps in safeguarding or protecting a nation’s archives or memory, and preserving the heritage and unique culture of that nation. This ensures that these archives are passed on to future generations and provides access to the global community (Kim & Oh, 2020).

4.0 Literature Review

4.1 Development of Digital Repositories

Institutional digital repository development is gaining momentum globally (Babu et al., 2012). According to Swanepoel (2005), the development of digital repositories started in late 2000 when the University of Southampton in the UK released a software package called E-Prints. The creation of digital repositories has since seen tremendous growth.

The growth in information comes with challenges especially the management of scholarly communication to an extent where a significant amount of studies output is likely not to reach a wide audience even if published (Thompson & Akeriwe, 2016).

In an attempt to solve the issue of managing scholarly output in terms of access control, rights management, community feedback, and publishing abilities, the DSpace project was set up (Jain, Bentley, & Oladiran, 2009). The introduction of DSpace, E-Prints, and other IR software packages has led to the establishment of repositories in academic institutions worldwide (Thompson & Akeriwe, 2016).

In time past, archivists managed their archives and repositories in isolation but the development and rise of the internet have greatly transformed the archives to a place where archivists are embracing the digital way of storing these archives with much focus on interacting more with users (Williams, 2015). Pugh and Theimer (2011) termed this paradigm shift as, 'Archive 2.0. Pugh and Theimer (2011) define Archives 2.0 as "an approach to archival practice that promotes openness and flexibility and argues that archivists must be user-centered and embrace opportunities to use technology to share collections, interact with users, and improve internal efficiency."

4.1.1 Digital repository initiatives worldwide

According to Pinfield et al. (2014), initial repository development was focused on North America, Western Europe, and Australasia, particularly the USA, UK, Germany, and Australia, closely followed by Japan. Since 2010, Pinfield et al. (2014) report that there has been significant repository growth in East Asia, South America, and Eastern Europe, especially in Taiwan, Brazil, and Poland. Countries like France, Italy, and Spain have maintained steady growth during this period with countries like China and Russia experiencing limited growth. However, Africa and Central Asia according to Pinfield et al.,(2014) continue to experience comparatively lower levels of repository development with the highest numbers of repositories still in Europe, North America, and Australasia as well as Japan. In their study, Gargiulo & Cassella (2010) found out that since 2001, the implementation of digital repositories in Italy had increased steadily.

Between 2000 and 2003 there was a rapid growth of repositories which was enabled by two technical developments. The first was the development of the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH), which is an interoperability protocol for exchanging information between repositories (Lagoze & Sompel, 2003; Sompel & Lagoze, 2000). The second development was the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) compliant open-source repository software, such as E-Prints (Gutteridge, 2002) and DSpace (Smith et al., 2003). These developments fast-forwarded the implementation and growth of digital repositories because they made installing a repository easy and straightforward (Crow, 2002; Lynch, 2003). The Directory of Open Access Repositories (OpenDoar) was set up to track repository growth which came about as a result of these two developments (Pinfield et al., 2014).

In countries such as the UK, Poland, and Brazil, the development and growth in the number of repositories have been possible due to policy developments put in place and also funded initiatives from government-sponsored agencies (Pinfield et al., 2014). As observed by Pinfield et al. (2014), different policy approaches have led to different outcomes in different countries. The UK and France have experienced different development patterns in the growth of IRs and this is partly a

result of the different policy approaches. According to Pinfield et al. (2014), whereas the UK encourages and funds the development of distributed institution-based repositories to a great extent through JISC infrastructure programs, France on the other hand encourages the development of a smaller number of more centralized repositories.

4.1.2 Digital repository initiatives in Africa

Studies have shown that Africa has not fully joined in the use of new information technologies which includes digital repositories (Makori, Njiraine, & Talam, 2015). Ezema & Ugwu (2013) attest to this, stating that Africa is yet to fully accept new information technologies, although recent developments show that researchers on the continent are gradually accepting new technologies in their day-to-day activities. Chiware (2007) however, is of a different opinion that institutions of higher learning in Africa have made incredible steps towards implementing new technologies like digital repositories through institutional funding and donor support.

Open Access was introduced in South Africa in 2004 by the Electronic Information for Libraries (eIFL) in collaboration with the South African Site Licensing Initiative (SASLI) which is a coalition of South African Libraries Consortia (Oluwasemilore, 2013).

The University of Malawi also established digital repositories to digitize and preserve its rare resources (Mapulanga, 2013). Studies also show that the development and implementation of IRs are increasing steadily in institutions of higher learning in Kenya (Makori et al., 2015). As cited in Mapulanga (2013), Ezema & Ugwu (2013) noted that the management, preservation, and dissemination of theses and dissertations in Africa were below expectations. For instance, out of 15 member states of the Southern African Development Community (SADC), only three countries namely Namibia, South Africa, and Zimbabwe have discoverable institutional repositories (Ezema & Ugwu, 2013).

4.1.3 Digital repository initiatives in Ghana

According to Agyen-Gyasi, Corlety, & Frempong (2010), the Kwame Nkrumah University of Science and Technology (KNUST) was the first to implement an active institutional repository in Ghana. The success of the IR in KNUST contributed immensely to the establishment of the Consortium of Academic and Research Libraries in Ghana (CARLIGH) and the International Network for the Availability of Scientific Publication (INASP) coming to the aid of four academic institutions namely; University of Cape Coast (UCC), Ghana; University of Education, Winneba, (UEW) Ghana; the Ghana Institute of Management and Public Administration (GIMPA); and the Methodist University College, Ghana (MUCG) to implement repositories (Dadzie & Walt, 2015). The University of Ghana also established a digital repository known as UGSpace. “UGSpace is an open access electronic archive for the collection, preservation, and distribution of digital materials” (Ofosu-Ampong, 2016).

In March 2014, an institutional repository was established at the University of Development Studies (UDS) but commenced full operation in May 2014. The need for a repository in UDS became necessary because it was quite difficult getting the research output of academics published

in international journals making their works less visible to the wider world (Thompson & Akeriwe, 2016).

Universities in Ghana currently with institutional repositories include the University of Development Studies (UDS), the Kwame Nkrumah University of Science and Technology (KNUST), the University of Cape Coast (UCC), the University of Ghana (UG), the University of Education, Winneba (UEW), the Ashesi University, the Methodist University College (MUC), Regent University College, Central University College (CUC), the Presbyterian University College, and the Christian Service University College (CSUC) (<http://indico.cern.ch>). Out of these, four have registered with the Directory of Open Access Repositories (OpenDOAR). They are KNUST (KnustSpace), UDS (UDSSpace), UCC (UCCSpace) and UG (UGSpace) (<http://www.andoar.org/countrylist.php>).

4.2 Benefits of digital repositories

According to Macha (2012) ‘institutional repositories are beneficial to the institution, the individual, the researcher, and lastly the academic library or archives involved in the initiative.’

Institutions with a published collection of journal articles through their open access repository give the institution’s research outputs worldwide visibility and increase the institution’s impact as well (Chan & Swan 2003). For the individual, IRs make it possible for one to have free access to research materials and also download and use these materials (Macha, 2012) thus, the success of an IR is measured or determined by its use (Shearer, 2003). Authors or researchers benefit from IRs when their research output gains visibility and exposure which results in many more people citing such works. The more a researcher’s work is cited, the more the researcher gains recognition and an increase in his or her scholarly reputation (Macha, 2012).

Hixson and Cracknell (2007) in a study discovered that at the University of Oregon, when archives in the IR conformed to open access archives standards, searches on the internet connected the user back to the university and this helped raise the profile of the institution. Correia and Teixeira (2005) also noted that an IR was a mark of an institution's quality or value and this public value went a long way to enhance the profile of the institution. IRs also help in disseminating research output widely and increasing maximum access to these outputs. According to Moahi (2010) when an institution maintains an IR and uses metadata that enables discoverability on the World Wide Web, the institution becomes highly visible in terms of its output on the internet. This visibility ensures that the activities of the institution become known and recognized. Institutions with IRs can manage and maintain a centralized collection of their outputs (Moahi, 2010).

5.0 Objectives of the study

The study was carried out so as to determine the following objectives:

1. To ascertain the legal requirements for the creation of a digital repository;
2. To examine the financial feasibility of setting up a digital repository;
3. To identify and examine the hardware and software required to set up a digital repository;
4. To identify and examine the human resource and other resources available and needed;
5. To examine how the digital repository can be maintained and sustained.
6. To identify and examine the benefits to be derived from setting up a digital repository.

6.0 Methodology

The qualitative method was used to carry out the feasibility study. Three methods of data collection used in the study were interviews, observation, and written documents. The population of the study comprised 40 professional staff of PRAAD and 2 technical staff of the National Information Technology Agency (NITA) making a total of 42.

The sample size of the study which was purposively sampled was 12, made up of the 10 heads of the various units of PRAAD representing 25% of the population plus 2 technical staff of NITA. The 10 heads of units were deemed to be the appropriate members of the population who could give the requisite information for the study.

7.0 Discussion of findings

The findings were based on responses drawn from the respondents and on observation. Ten (10) respondents representing 83.3% out of 12 sample populations were interviewed for the study. There was difficulty getting the 2 staff from NITA. All efforts to interview them proved futile after several appointments scheduled failed.

7.1 Legal requirements for setting up a digital repository

The findings revealed that out of the 10 respondents only 4 (40%) had knowledge about the legal framework that establishes the rights and responsibilities of PRAAD's repositories. Respondents were also aware of the policies guiding copyrights of objects in the archival repositories.

The respondents mentioned that PRAAD operated under the law that is, PRAAD Act 535 and that was the legal framework within which PRAAD operated. Within the law, PRAAD was charged with the responsibility of managing public records both electronic and paper records.

Findings further showed that there was no national law or regulation by which electronic records were managed but respondents were of the view that Ghana did not need another law to enforce digital records since the current law covers both digital and paper records. According to respondents, policies were available to guide everything PRAAD does.

This finding is consistent with a study by Deventer and Pienaar (2008) in which it was mentioned that in initiating the institutional repository of the University of Pretoria, policies and procedures had to be put in place to ensure that the implementation of the IR was successful. The finding also supports the study of QA focus (2004) which shows that it was necessary for a digital repository to operate within a clear legal framework. This framework should state the rights and responsibilities of the repository, its depositors, and its users.

On the issue of copyrights, the findings indicate that there are no strict copyright laws when it comes to the archives at PRAAD, which holds public records and a few privately donated records.

Those who donated records also gave PRAAD the right to disseminate information in the materials to the public. Thus, when it comes to copyright issues, PRAAD has the right to share its holdings with the public. Contrary to this, when it comes to institutional repositories one major challenge that arises is the issue of copyrights (Ngure, Gatiti & Wanyingi, 2014). According to Ngure, Gatiti & Wanyingi, copyright laws "determine how a person can deal with a written work such as a journal article or a research paper". Authors of research works are required to authorize how their works are copied and distributed (Christian, 2009). Barfi-Adomako and Kwadzo (2015) in their report on a three-day workshop on records management, digitization, and institutional repository noted that issues that needed to be addressed when starting an institutional repository included legal requirements, securing appropriate licenses relating to software, IR policies regarding content and submission processes and copyright issues.

Copyrights is thus, not a big issue when it comes to establishing a digital repository for the Public Records and Archives Administration Department (PRAAD) because it holds mainly public records which it has rights over and is not required to seek permission to share or make information available to the public.

7.2 *Financial feasibility*

Findings of the study revealed that the government funded PRAAD but government funding was not adequate, thus, PRAAD sometimes sought funding from donors by means of proposals. Some respondents were of the belief that the lack of funding contributed to PRAAD not having a digital repository in this digital age. Respondents indicated that PRAAD needed support from donor agencies since in the past they had sought support from some for projects and equipment. However, other respondents were of the view that being a government department, the government was capable of sponsoring the establishment of a digital repository. These respondents firmly believed that the government was in a position to help if only the leadership of PRAAD approached the government with its concerns in order to get the government's attention because the government also has many priorities.

Research done by Pinfield et al (2014) proves that there are very few government repositories that are managed by national governments and government-sponsored agencies. According to Pinfield et al (2014) countries such as the UK, Poland and Brazil have had a growth in the number of repositories as a result of funded initiatives from government-sponsored agencies.

According to the findings, PRAAD faces financial challenges because of low budgetary allocations and inadequate internally generated funds. Respondents indicated that its yearly budgets were not forthcoming. Respondents lamented that there was nothing they could do about the government not giving them its budgetary allocations in full. Some were of the view that this was a result of the government not seeing the value of the public records and archival materials that PRAAD holds whereas others believed the government knew the importance of the nation's archives in PRAAD's custody. This is in light of the recent case Ghana won against Ivory Coast in the Ghana - Ivory Coast border dispute where documents that were used to support the case were retrieved from PRAAD. Findings also revealed that internally generated funds within the department were inadequate. While most respondents complained about the small IGFs one respondent maintained that PRAAD had so many avenues of raising IGFs but argued that some staff kept those monies in

their pockets instead of depositing them in the department's coffers. For instance, when staff sent a proposal to decongest records in a ministry, department, agency, public institution, or private institution and wins the contract in the name of PRAAD, after decongesting instead of the money paid to be deposited in PRAAD's IGF, sadly the staff keeps the money leaving PRAAD with nothing. This goes against the department because the department's resources are used and besides, and government time is used.

Some studies have shown that one problem developing countries face in their effort to develop digital repositories is the lack of funding. Chisenga (2006) makes mentions the process of digitizing all the holdings as being time and labour intensive thus making it an expensive project. Oluwasemilore (2013) also supports this by saying that creating digital repositories in developing countries is very expensive as compared to the developed world. This can be attributed to the lack of adequate infrastructure of a foundation already in place to facilitate the establishment of a digital repository. Christian (2009) also identifies a lack of funding as one of the factors responsible for the slow growth of digital repositories in Africa.

7.3 Hardware and Software required

The findings indicated that the IT unit at PRAAD was not fully equipped to handle and manage a digital repository. The unit lacked technical expertise because the IT staff who are two (2) did not have any knowledge about digital repository management system software. Although they did not have any idea about the digital repository software available, they were optimistic that with the right training, and resources they would be able to maintain the system if it was established. Some of the software available on the market include Archimède, CERN Document server software, DSpace, EPrint, Greenstone, and Digital Commons. The findings also show that in terms of hardware, computers were inadequate, and servicing these machines was a problem. The hardware requirements PRAAD may need include a server preferably a Quad Core server with 4 GB or more RAM and 200 GB or more hard drive. The storage space may vary depending on the size of the digital contents that have to be stored. Also, overhead scanners are needed to digitize archival materials. Overhead scanners are appropriate for scanning delicate materials like archival materials that are fragile or worn out without causing further damage to the documents.

Again, there were issues with constant electricity power supply, internet connectivity, and stable technology. The department relied solely on prepaid electricity and spends about 1,500 GH cedis worth of electricity every two weeks. Respondents mentioned that if lights went off or prepaid got finished then the department stayed without light until lights came back or prepaid units was bought. The department also did not have a standby generator. Having a digital repository would need a constant supply of electricity, thus, PRAAD is not ready in terms of constant electricity power supply. The findings also revealed the issue of slow internet connectivity. Having a digital repository requires fast internet connectivity to enable users to access information uninterrupted anywhere at any time. However, findings showed that there were plans to hook the department to NITA's fiber optics, which would make the internet faster. Currently, there is software developed by the head of IT and used by the search room staff to record daily activities but not to manage the records in the repositories. The lack of funds remained the main reason why PRAAD has not gone digital, this is because software must be purchased, equipment like computers and specialized scanners must also be acquired to help in the digitization process.

According to Oladokun (2015), the IT departments of institutions are required to help in putting the systems in place to ensure that the digital repository is set up and functions effectively and efficiently. The staff of the IT unit of PRAAD will therefore need to be trained well to be able to manage a digital repository system. The lack of funding is consistent with studies done by Chisenga (2006) and Oluwasemilore (2013). They indicated in their studies that developing repositories was capital intensive, especially in developing countries coupled with unavailable funds to set them up.

The lack of stable technology is supported by a study by Moahi (2010) who indicates that it is difficult to implement and sustain digital repositories in Africa due to the unstable nature of technology. He further states that it hinders how accessible the repository would be at all times.

Oluwasemilore (2013) points out that inadequate internet connectivity hinders the progress or growth of digital repositories in developing countries. Digital repositories according to Oluwasemilore need fast and reliable internet connectivity and Nigeria faces the challenge of very slow internet connectivity, which makes the internet unreliable.

With the issue of irregular power supply, it is consistent with the study by Fatunde (2008) where it was observed that poor electricity is a major hindrance to the growth of ICT in Nigerian Universities. Oluwasemilore (2013) also believes that irregular power supply is a major problem in developing countries making the development of digital repositories very difficult and at the same time expensive.

7.4 Human resource available

Findings showed that PRAAD had competent staff who are willing to be trained to be able to manage a digital repository system. According to the findings, staff were on top of their jobs in managing the manual records. The findings further revealed that some staff were willing to embrace a new initiative if established while a few found it difficult to embrace and adapt to change. For instance, the software the IT unit developed to help staff log in daily activities in the record center was met with much reluctance to date. Staff were ready to have a digital repository, however, they believed getting training would help make them more efficient and effective. The findings support other researchers like Simons & Richardson (2012). In their study, they reiterate the need for more training opportunities for repository staff. Simon and Richardson (2012) are of the view that repository work required a specific set of skills that can be difficult to find, thus, institutions may need to invest in the training of staff. Participants at a three-day workshop on records management digitization and institutional repository as reported by Barfi-Adomako & Kwadzo (2015) advised on the need for staff training to enable them to digitize materials from start to finish. Barfi-Adomako and Kwadzo (2015) also suggest that organizations should periodically train staff on digitization and IR until the staff gets familiar with the project. In contrast to training staff to handle a digital repository, Organ and

Mandi (2007) in their study found that outsourcing staff was an appropriate digital repository option for higher education institutions especially when on-site IT support is limited. Outsourcing allows local staff to concentrate on cooperating with faculty to promote and populate the repository (Organ & Mandi, 2007).

7.5 *Maintaining and sustaining a digital repository*

Findings of the study indicated that the staff maintained archival repositories. Despite the lack of equipment and unfavorable conditions in the repositories, the staff does the sweeping and cleaning of the repository occasionally. Their dedication towards maintaining the current repositories despite the setbacks is evident that staff will be able to maintain a new system if put in place. Findings show that their major setback was the lack of funds to repair deteriorated documents and also the bad state of the repositories. Most documents have been lost to deterioration and there are documents waiting to be repaired by the Preservation Services Branch. Repair works have not begun because of a lack of costly materials. In order to ensure the long-term sustainability of a digital repository, PRAAD would have to ensure a constant supply of funds through government subventions and donor support. PRAAD could also enter into a Private Public Partnership and have the public sector provide the data while the private sector provides the funding to sustain the digital repository continuously. Another means through which PRAAD plans to sustain the system if established was to make users pay subscription fees before accessing full text. Respondents believed that if the money was managed well it would be enough to maintain and sustain the system including the technical infrastructure, ensuring that the software does not go obsolete. According to Drake (2004), "repositories cannot be sustained without long-term infusions of funds. Everyone involved in a repository needs to understand that the project has become part of their everyday lives and will require attention and funding perpetuity." Bradley (2006) adds that the sustainability of a digital repository must be taken into consideration by the archivist aside from the preservation of digitized and physical items in the repositories. Sustaining a digital repository according to Bradley (2006) has to do with maintaining valuable data without significant loss or degradation.

7.6 *Benefits derived from digital repositories*

Findings showed that setting up a digital repository would benefit PRAAD greatly. Currently, people travel far and near to have access to information but with the establishment of a digital repository, users could sit in the comfort of their homes or countries and have access to PRAAD's holdings online. This will save searchers the time and cost of traveling all the way to PRAAD to have access to information. PRAAD would benefit financially because users would pay subscription fees which will generate some funds for the department. Also, a digital repository would give the department some prestige and a good image. This good image will encourage more people to patronize the services of the department. The findings further showed that the archives are beneficial to PRAAD, to the country, and to users. Setting up a digital repository will serve as a backup for the original document to reduce the handling of these documents that keep deteriorating over time. The digital repository will protect the documents from further damage. This will help reduce the cost of preservation since the original documents will be protected. Establishing a digital repository will help reduce the workload of staff in the search room who daily have to search for documents for searchers who come in. They inhale the dust and sometimes get bitten by insects in the repositories but with a digital repository in place, they would just help searchers find what they want with the click of a button and the existence of a digital repository will reduce the rate at which they visit the repository for documents. This will give staff more free time to do other tasks that will generate more funds for the department. The country benefits from the archives because the archives hold their history; the archive is the collective memory of the

state. For instance, the archives became beneficial to the state after a document that was retrieved from the archives was used in a court case between Ghana and Ivory Coast in the Ghana-Ivory Coast border dispute. The government benefited from the archives because without those documents it probably would not have won the case. Also, people present certified copies of documents to the courts to support their cases. This helps in promoting peace and unity in a nation. These are the more reason why the rest of the documents in the repositories need to be salvaged by digitizing and making them accessible online so that it reduces the frequency of handling. According to Macha (2012), repositories are beneficial first to the institution, the individual, and the researcher. Chan and Swan (2003) also mention that digital repositories give the institution's holdings worldwide visibility and increase the impact the institution makes.

8.0 Conclusion

The importance of digital repositories in this digital age cannot be underestimated. The need for a digital repository in PRAAD has become critical because a lot of archival materials have been completely lost as a result of deterioration from frequent handling by users. Unfortunately, these materials in PRAAD's custody have no backups. Thus, in the event of a fire outbreak or natural disaster, PRAAD stands the chance of losing its holdings. Each day, part of Ghana's history is lost to deterioration. The research findings show that despite the setbacks if PRAAD gets financial support or funding from government or donor agencies, it would be possible to have a digital repository established to salvage the situation at hand.

The establishment of a digital repository at PRAAD will help reach a wider number of users, protect the nation's memory, and preserve the heritage and culture of Ghana. Users can access information at any time, at any location. Users can also access the same documents at the same time at different locations with a digital repository.

This being a digital age makes it crucial for the department to go digital and its holdings made available to users irrespective of time and distance.

9.0 Recommendations

To have a digital repository established in PRAAD, the following recommendations were informed by the findings of the study.

9.1 *Legal requirements for creating a digital repository*

The findings indicated that the PRAAD Act 535 was not enough to enforce the law for the use of electronic records for various transactions including presenting digital records as evidence in court. Thus, there is a need for a regulation to enforce the Act and ensure that digital records are seen as valid records.

9.2 *Financial feasibility*

Findings revealed that PRAAD solely relies on government funding which is not enough and faced financial challenges due to low budgetary allocation and insufficient internally generated funds therefore, there is the need for PRAAD to get the approval of parliament to increase charges on

the services it renders. These include binding, decongestion exercises in other institutions, photocopying, certification, and preservation of documents. This will help increase its IGFs.

To manage the IGFs properly, a unit must be set up whose primary responsibility will be to ensure that external contracts and other consultancy services PRAAD provides are paid for and the monies go into PRAAD's account. This will limit the rate at which staff deals directly with clients.

To increase funding to sustain the digital repository over time, PRAAD can also privatize the repository or enter into a Public Private Partnership where PRAAD provides the data whereas the private sector ensures constant injection of funds. PRAAD can also charge subscription fees from users of the digital repository to help raise funds to maintain and sustain the system.

9.3 Hardware and software required

PRAAD will need to seek funding from donors to purchase or ask donors to donate hardware required like computers, scanners, servers, and a standby generator to ensure there is an interrupted power supply. PRAAD can also rely on the National Information Technology Agency for advice on how to get support to acquire the hardware and software needed and also get hooked on NITA's fiber optics for fast internet connectivity.

9.4 Human resource available

The finding showed that the staff of PRAAD lacked the necessary skills needed to manage a digital repository system, therefore staff will need to be trained by experts on how to digitize the holdings of PRAAD from start to finish and how to handle a digital repository software system to enable them to manage the system if it is established.

9.5 Maintaining and sustaining a digital repository

PRAAD needs to seek funds from donors through proposals to help repair and renovate the repositories they have currently. The renovation should include ensuring there is a good lighting system, air conditioning, and the deteriorated materials repaired to ensure that the original documents are in good shape and ready to be digitized. Thereafter, a digital repository can be set up to serve as a backup for the original documents which will help reduce the rate at which searchers and staff handle them.

9.6 Benefits to be derived from a digital repository

PRAAD will have to lobby top government officials to get the attention of the government to fund the establishment of a digital repository. PRAAD can leverage the fact that it was able to provide documents with which the government used to support its case in court against Ivory Coast in the Ghana-Ivory Coast border dispute. If those documents had not been in the custody of PRAAD the case could have been lost. Thus, there is a need to safeguard the nation's archives to prevent them from getting lost. This will be done well if a digital repository is established to serve as a backup for all the original documents in the archival repositories.

Having a digital repository will also save people the cost and time of traveling all the way to PRAAD repositories to access information. People can sit in the comfort of their homes and access

information through the digital repository by paying some subscription fees which will also help raise funds for PRAAD.

PRAAD will also have to organize awareness programmes, seminars, public lectures, and open days to educate and sensitize the general public on the need and importance of the archives. This will get more people to appreciate the existence of the archives and also patronize their services.

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