Implementation of enterprise-wide systems to manage trustworthy digital records in Botswana's public sector

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ABSTRACT

The study is part of InterPARES Trust (IP Trust) 4 projects which is a multi-disciplinary and multinational research project that explores issues concerning digital records entrusted to the Internet world-wide[1]. Like most African nations, Botswana is currently implementing Information Communication Technologies (ICTs) in its public service in pursuit of e-government. As part of this transition, Botswana is grappling with a change from manual recordkeeping practices to digital ones, where records might be supported by ICTs or generated within ICTs themselves. These ICTs that manage or contain multiple kinds of records are known as Enterprise Content Management systems (ECMs). Digital records may be generated within ECMs, managed by ECMs optimized for recordkeeping, or may require intervention both to identify records as records and to place them in an environment where they can be managed (such as an Electronic Document and Records Management System (EDRMS). Additionally, some organizations may utilize less specific enterprise wide systems that perform many of the functions of dedicated ECMs.

This paper reports on findings of the Botswana InterPares project and reviews literature on enterprise-wide systems and ECMs in Botswana's public service thus attempting to discern whether these instances are cloud based. It draws on a bibliography of over 50 published articles in order to examine the state of enterprise-wide systems and ECM applications in the Botswana public service; to determine their relationship (if any) to existing archives and records management (ARM) practices; and to contextualize these enterprise-wide systems and ECM applications with acknowledged ARM challenges in Botswana and Africa.

Keywords: Cloud; ICTs, ECMs, Enterprise-wide systems, digital records, public sector, Botswana

[1] InterPares - Africa Project (under the Social Sciences and Humanities Research Council of Canada's Community-University Research Alliances (SSHRC-CURA)/ University of British Columbia, School of Library, Archival and Information Studies)

Introduction: Botswana's Public Service and Enterprise-wide Systems

Botswana is a southern African nation of just over 2 million people. Although small by population, it exerts an outsized influence in comparison to other African nations when the state of its public service is considered. For this reason, coupled with its well-regarded archival service, it forms an excellent country in which to study the intersection of digital records management (RM) and public services.

Like many other African nations, Botswana is currently implementing Information Communication Technologies (ICTs) in its public service in pursuit of e-government, or public services accessible by citizens via ICTs. As part of this transition, Botswana is grappling with a change from manual recordkeeping practices to digital ones, where records might be supported by ICTs or generated within ICTs themselves. ICTs that manage or contain multiple kinds of records are often known as Enterprise Content Management systems, or ECMs. ECMs can be defined as:

> "The strategies, methods and tools used to capture, manage, store, preserve and deliver content and documents related to organizational processes. ECM tools and strategies allow the management of an organization's unstructured information, wherever that information exists." (AIIM 2010)

Digital records may be generated within ECMs, may be managed by ECMs optimized for recordkeeping, or may require intervention both to identify records as records and to place them in an environment where they can be managed (such as an Electronic Records and Document Management System, or EDRMS). Additionally, some organizations may utilize less specific enterprise wide systems that perform many of the functions of dedicated ECMs.

The goal of this study is to understand:

- How digital records in Botswana's public institutions are managed?
- What the legal and regulatory context is of digital records?
- What the current technological framework within public sector institutions is for digital records?
- What the technological environments is that generate records?

In particular, this study examines enterprise-wide systems and ECMs in Botswana's public service, and attempts to discern whether these instances are cloud computing based. It draws on a bibliography of over 50 published articles in order to examine the state of enterprise-wide systems and ECM applications in the Botswana public service; to determine their relationship (if any) to existing archives and records management (ARM) practices; and to contextualize these enterprise-wide systems and ECM applications with acknowledged ARM challenges in Botswana and Africa.

Historical Context

Today's Republic of Botswana came into being in 1966, when it gained independence from Britain. Shortly thereafter in 1967, the Government of Botswana created the

Botswana National Archives Service (BNARS). In 1978, the Government passed the National Archives Act, giving BNARS powers and responsibilities for government records and information management (Moatlhodi, 2015). However, BNARS operated in a custodial fashion until it was granted powers to manage active and semi-active public sector records in 1992 (Ramokate and Moatlhodi, 2010 p. 68), addressing a problem with which many other African archives services still struggle with. Today, BNARS manages all government Records Management Units (RMUs) (Ramokate and Moatlhodi, 2010 p. 68).

During the period between independence and today, and particularly in the 1960s and 1970s, BNARS faced several challenges. Keakopa (2010b) identifies some of these as: the collection of oral traditions; repatriation of records from overseas; records backlogs; training and retention issues; legislation; preservation, digitization, and conservation issues; outreach and marketing; and integration of RM programs. Some of these issues persist to today. Although many other African nations possess low GNPs, corruption, and unstable political systems that affect records management (Stephens 1993 p. 61, Asogwa 2012 p. 208), Botswana has been relatively stable, economically successful, and has made a visible improvement in its e-government and ICT initiatives. In 1997, Botswana created a “Vision 2016” document to guide its e-government initiatives. It then adopted an ICT policy ("*Maitlamo*") in 2007 with the aim of creating a stable and competitive market and to provide an investor friendly ICT legal and regulatory environment. In 2011, the government created an E-Government Strategy (set to run between 2011-2016) that outlined seven major programmes and approximately twenty-five interrelated projects to move appropriate government services online (Botswana Government, 2011). This strategy is set to conclude shortly.

As part of the above initiatives, Botswana has established the Botswana Telecommunications Authority (BTA) and the Botswana Telecommunications Company (BTC) as ICT regulatory bodies. It also created various e-government initiatives, some of which include enterprise wide systems. The World Economic Forum (WEF) Global IT Report 2003-2004 currently ranks Botswana 55th in the world in terms of overall national connectivity, demonstrating that the country is performing at or above global averages in terms of ICT infrastructure. Annual ICT expenditure in Botswana is approaching 1 Billion Pula, which demonstrates the significant domestic demand for ICT products and services (Botswana Government 2004 p. 13). Ultimately, the government in Botswana has continued to make progressive investments in the ICT sector by putting into place the institutional, legal and policy framework to accrue benefits provided by ICTs (Kalusopa, 2010) and also by investing in technical infrastructure and human resource development (Botswana Government 2004). However, these benefits are not yet fully realized (Mosweu et al, 2014).

Botswana is still lagging behind in utilizing information and communication technologies for delivering e-government services and creating a comprehensive strategy to do so (Nkwe 2010). Keakopa (2006) identifies clearly laid out strategies for managing electronic records as lacking. An e-readiness assessment carried out in 2004 showed that Botswana’s level of e-readiness is a contrast of extremes. Botswana has a world-

renowned legal system and sophisticated Government Data Network and Police Private Network, but telecommunications service quality is described as inadequate by members of the government and private sector (Botswana Government 2004). This is also reflected in ARM literature. Authors such as Keakopa (2006) note the high cost of ICT implementation in rural areas (p. 251). A national telecommunications monopoly is also a hindrance to increased ICT adoption (Moloi 2009). Moloi and Mutula (2007) note that a gulf exists between infrastructure in the cities versus rural areas (p. 299). In short, Botswana's ICT adoption and e-government development can be characterized as uneven.

Records Management Challenges Facing Botswana

In Botswana, the national archives - BNARS - has total control of records management activities in government agencies, unlike other countries in the Eastern and Southern Africa Regional Branch of the International Council on Archives (ESARBICA) (e.g. South Africa and Namibia) in which the national archives only play an advisory role in these activities. Discussions about digital records management and public services in Botswana in regards to challenges and opportunities are thus closely tied to BNARS (Keakopa, 2006).

Botswana faces a number of current challenges in improving its ARM practices. These can be described broadly as legislation issues, staffing issues, organizational issues, policy issues, and practice issues.

- Legislation issues can be described as:
    - Inadequate digital records legislation.
    - Lack of Freedom of Information (FOI) and Access to Information Legislation.
- Staffing issues can be described as:
    - Inadequate training and lack of trained staff.
    - Lack of ARM professionals in ARM positions and staff retention problems.
    - Problems regarding professional collaborations.
- Decentralization of ARM within institutions.
- Policy issues can be described as:
    - Lack of policies.
    - A focus on ICT implementations in place of ARM policy.
- Lack of digital records management.

Many of these challenges are common across Africa and within the ESARBICA region, to which Botswana belongs. As will be shown below, many authors have identified poor legislation, inadequate staffing, decentralization, lack of policy, and no digital RM as issues across ESARBICA.

Goals of Enterprise-wide System Implementations in Botswana

Enterprise-wide systems and ECM application implementations are closely tied to

improving government public services via the introduction of e-government. In cases where e-government is tied to RM, improvements can provide:

- Increased work efficiency,
- Increased user satisfaction
- Improved business processes
- Improved compliance
- Cost reductions
- Poverty reduction
- Improved accountability
- Effective management of state resources
- Rights protection
- Anti-corruption strategies and services.

All of the above can be provided to citizens regardless of their socio-economic status (Salamntu *et al* 2015;Kemoni *et al* 2007; Bwalya, *et al* 2015). It is with these benefits in mind that Botswana and countries like it attempt to adopt enterprise-wide systems and ECMs in order to improve their e-government services.

Legislation

Legislation forms the basis for all public service activity in any country, and Botswana is no exception. Many authors have identified problems of legislation as a challenge for the ARM practices of African countries and particularly those in ESARBICA. Africa generally provides many examples of poor legislation affecting RM. In a literature review regarding digital RM in sub Saharan Africa, Asogwa (2012) argues that digital RM is hampered by outdated legislation (p. 201-2). In Namibia, Barata *et al* (2001) found that no legislation exists to explicitly manage digital records (p. 38). In a dedicated study of archival legislation in the South African Development Community (SADC), Ngoepe and Saurombe (2016) concluded that aside from South Africa, no countries had explicit digital records legislation and few had provisions for digital records that made them admissible as evidence in their courts (p. 37-8). Outdated legislation has limited the ability of ARM professionals in ESARBICA to deal with digital records (Keakopa 2002, p. 46). In a further article, Keakopa (2010b) argues that archival legislation in ESARBICA does not provide for the records lifecycle, has weak mandates for ARM professionals, and weak definitions of records that do not allow for digital records (p. 62). Keakopa also notes that these outdated acts do not integrate well with existing freedom of information acts (p. 62-3). Ngulube (2004) argues that legislation needs to address digital RM specifically (p. 152), and found that in most cases in sub-Saharan Africa, it does not (p. 147). In a paper on public records and archives, Ngulube and Tafor (2006) identified weak legislation that does not account for digital records as a problem in sub-Saharan Africa (p. 60-1).

Besides general recordkeeping legislation, many countries also lack specific legislation that affects recordkeeping related to FOI, access to information, and privacy. At the turn of the last century, no ESARBICA members had FOI legislation in place (Mnjama 2001, p. 118). Furthermore, many ESARBICA nations lack privacy legislation (Keakopa 2009,

p. 7-8). The legislation problems for ESARBICA nations and Africa as a whole are many. In Botswana's case, we can identify two major themes: a need to elaborate its digital records legislation, and a need for FOI and Access to Information Legislation.

Inadequate Digital Records Legislation

The Botswana Government (2004) has identified modification of data as a problem needing to be addressed through legislative reform (p. 9). It has also identified the need for legal infrastructure to govern e-commerce activities in parallel with existing legislation that covers these activities when performed on paper (p. 9). The government has argued the need for "amendments to specific legislation including the Criminal Procedure and Evidence Act, the Authentication of Documents Act, the Foreign Documents Evidence Act and possibly selected other legislation (e.g., the Botswana Stock Exchange Act) to allow for the use and enforcement of electronic documents" (p. 10). An Electronic Documents Act is also mentioned (p. 16). This shows that the government is aware of archival concerns regarding digital records, particularly the need to address retention policies in legislative reform (p. 20), giving Botswana a significant platform on which to build.

However, these bold pronouncements did not bear immediate fruit. In 2008, Botswana still lacked relevant legislation to deal with the ICTs that its policies were instituting (Kalusopa 2008, p. 106). A digital records assessment of Botswana by Moloi (2009) determined that digital records were not admissible as evidence of business transactions due to a lack of legislation for managing digital records (p. 109). Although legislative reform was occurring, Moloi(2009) argued that poor training of ARM professionals would hamper improvement (p. 114-5). By 2010, Botswana had recently updated its archival legislation, but these changes did not completely address all digital records management processes. Examples of ameliorated legislation dealt with "capture, retention, disposal and custody of archival electronic records" (Keakopa 2010b, p. 63-64).

In its 2011 E-Government strategy, the Botswana Government (2011) promised that bills regarding Data Protection, Electronic Commerce, and Electronic Signatures were all forthcoming (p. 13). Perhaps taking note of the lag between promise and realization, Moatlhodi (2014) noted that although Botswana's ARM relevant laws did "provide […] the legal framework for records management," he emphasized that this does not extend to digital records (p. 62-63). Ultimately Botswana has begun making some of the changes called for in the 2011 E-Strategy document. Ngoepe and Saurombe (2016) noted the passing of an Electronic Records (Evidence) Act in 2014. It "provides the admissibility of electronic records as evidence in legal proceedings and authentication of electronic records" (p. 30). Although gaps remain, the passing of this Electronic Records act shows that progress is still taking place and that Botswana appears committed to improving its recordkeeping legislation.

Lack of FOI and Access to Information Legislation

FOI and Access to Information legislation is oftentimes associated with e-government initiatives. Despite a forward-looking approach on legislation, Botswana currently possesses acts regarding neither. The government has some awareness of the problem. It noted in its 2004 report that personal privacy, private data, and access to information are areas where legislative reform is needed (Botswana Government 2004 p. 9-11). This is partly to allow greater economic integration of Botswana with the Organization for Economic Cooperation and Development (OECD) and European Community (p. 24-5).

In an investigation of the Court Records Management System of the Department of the Administration of Justice (AOJ), Mosweu (2012) noted a lack of Access to Information legislation (p. 10), and that electronic signatures are not yet legally recognized despite Botswana ICT policy promising forthcoming policy or legislation to deal with them. (p. 25). Finally, Bywala et al (2015) noted that in 2014, Botswana had not enacted an FOI law (p. 137). Although Botswana does not currently possess FOI or Access to Information legislation, this deficiency has been noted in government publications. Like the Electronic Records Act of 2014, it is possible that revised or new legislation will appear in the coming years to deal with this problem.

Staffing

Staffing is a problem that affects nations in ESARBICA as well as Africa as a whole. Writers in the African ARM field commonly identify staffing as a major problem. In 1993, Afolabi (1993) provided a plan for the revitalization of archival education and training in Africa. More than ten years later, sub Saharan African ARM staff were still often untrained, and those that had digital records skills often left their jobs for better positions (Barata *et al* 2001, p. 36). Shortages of staff trained in the management of digital records in sub-Saharan Africa have been critical (Ngulube 2004, p. 148). Furthermore, the same author argues that effective environmental preservation in sub Saharan Africa is deficient and requires on-going staff training (Ngulube 2005, p. 163-4). One proposed solution to the skills problem has been better staff training programs focused on technology and digital records (Keakopa 2002, p. 46-7). Another is collaboration with local universities for training (Ngulube and Tafor 2006, p. 76). Ngulube (2007) argues that sub Saharan African ARM education is focused too much on “generic skills of information management” and that some focus on preservation is required (p. 164).

Finally, Keakopa (2010b) examines the dual problems of staff training and retention in ESARBICA throughout the 20th century. In the case of Botswana, staff retention is described as a “crisis,” although it was also noted that the University of Botswana possess the region’s most important academic training center (p. 59-62). Asogwa (2012) notes that most ARM professionals in Africa lack skills in digital RM, and furthermore many lack dedicated ARM training (p. 202-3). Wamukoya and Mutula (2005) called for an e-records management strategy for ESARBICA that includes “human resources development that focuses on education, training, and continual

professional development" (p. 78). Staffing is clearly one of the most important concerns of African ARM scholars. In the case of Botswana, staffing can further be subdivided into issues of training, lack of professionals, retention, and collaboration.

Training

The International Records Management Trust (IRMT) (IRMT 2008) conducted a study and found that most records managers in MDAs in Botswana "had no formal training." BNARS was working to provide trained records managers to MDAs based on its own training programs. The University of Botswana, besides dedicated academic programs, has also provided professional training to public service staff. However, diploma and certificate programs (which were aimed at public service staff) were being phased out in favour of the Masters program. Moloi and Mutula (2007) noted plans to train BNARS' staff in digital records, but also found problems regarding RM in ministries as many RM staff had been drawn from other positions with no prior training. In general, computer literacy was lacking in BNARS (p. 298-9). More broadly, Kalusopa and Zulu (2009) found that digital preservation skills were lacking in heritage institutions in Botswana (p. 105-6). In a comparison of BNARS and South Africa's National Archives & Records Service (NARS), Ngoepe and Keakopa (2011), found that both lacked trained staff. They identified high staff turnover in South Africa and Botswana (p. 154 and 156).

In an examination of the Court Records Management System in Botswana's AOJ, Mosweu (2012) noted the need for continuous training, especially as the system is modified (p.84-5). Mampe and Kalusopa (2013) found that records management training was lacking among both users and RM professionals of the Botswana Corporate Services of the Ministry of Health (p. 20). 80% of records staff at the Ministry of Labour and Home Affairs (MLHA) had no on the job training (Moatlhodi 2014, p. 69). Training is an area where Botswana's reality broadly matches that of the rest of ESARBICA. The presence of the University of Botswana's well-regarded archival training program does offer some hope that the situation can be ameliorated.

Lack of RM Professionals and Staff Retention Problems

Lack of RM professionals and an inability to retain staff vex both Africa and Botswana. A lack of skilled manpower is a problem for the ARM profession across sub-Saharan Africa (Tough 2009, p. 197). Similarly, Wamukoya and Mutula (2005) have noted the lack of digital records skills of ESARBICA ARM professionals (p. 75). In Botswana, the activities of BNARS have been hampered by a lack of skilled personnel and an inability to retain staff due to pay issues (Ramokate and Moatlhodi 2010,p. 77-78). Although BNARS has previously sent staff for further education via ARM Master's programs, these students thereafter abandoned BNARS for better paying opportunities (IRMT 2008, p. 15).

Professional Collaborations

Better professional collaboration is a common desire of scholars studying ARM in Africa. Understanding between ARM professionals and their departmental managers is required to ensure effective ARM (Barata *et al* 2001, p. 42). Keakopa (2002) calls for

> "linkages and cooperation between archivists, records managers, legal staff, programme managers, clients and counterparts in IT for the development of record keeping systems. IT managers are needed mainly to help design systems to keep records. There is also a need for programmes and approaches appropriate for business" (p. 47).

In a further article Keakopa (2010b) reiterates the above by arguing that strong partnerships must be created not only between ARM professionals, but also with other stakeholders like ICT and cultural institutions (p. 71-2). On a subtler note, Kemoni *et al* (2007) argue that archives and records management professionals need close collaboration in order to achieve all the benefits that can be derived from records (p. 16-7). Finally, Ngulube (2007) argues that ESARBICA should foster partnerships between ARM professionals and those working in museums, art galleries, and other heritage institutions (p. 165). Although professional collaboration is not clearly identified in literature regarding Botswana as a problem, its presence in the general literature would lend credence to the idea that it should be also be taken into consideration in the Botswana context. Its absence from the specific literature on Botswana shows that this may be a good area for future research.

Decentralization of Records Management

Botswana's e-government strategy (Botswana Government 2011) identifies decentralized records management plans as a minor problem affecting the country's public service. The Botswana Government (2011) describes a situation where some ministries attempted to create customer relationship management, records management, or document management solutions for their own department, without considering how it may affect other departments (p.16). The e-government strategy aimed to ameliorate this problem, partly by instituting a technical cluster system to avoid redundancy when implementing new systems (p. 29).

Lack of RM Policies

A lack of RM policies is a problem identified by many authors. In discussing Africa generally, Tough (2004) argues that the policies developed by South Africa's NARS can act as a starting point for other nations looking for to implement RM standards (p. 11-12). A lack of preservation policies can lead to problems such as poor climate controls

in archives (Ngulube 2005, p. 159). Policy frameworks for ARM in ESARBICA have been described as weak (Ngulube and Tafor 2006, p. 61).

The state of recordkeeping policy in Botswana parallels findings from the rest of Africa. Moloi and Mutula (2007) found that there was no policy in Botswana for records management or digital records management (p. 298). The same authors also discussed Botswana's ICT policy in its draft phase and claim that it only addressed archives and not records management, a problem that would seem to have been addressed in the final version. In a survey of digital heritage institutions in Botswana, only 14.3% of institutions had an access policy for digital materials leaving "terms of access to digital resources by members of the general public in most heritage organisations … undefined" (Kalusopa and Zulu 2009, p. 104). Similarly, only 14.3% of the institutions had policies for the selection of digital materials (p. 105). In further articles, Kalusopa (2011, 2008) also found that labour organizations in Botswana possessed no RM policies (p. 209), and that there was no national policy framework on digital preservation and thus few digital preservation policies in public bodies (p. 106). The IRMT (2008) focuses on the *Maitlamo* ICT policy and concludes that for e-government to be effective in Botswana, greater attention must be paid to paper and digital records (p. 18). Moloi (2009) states that Botswana did not possess a records or digital records policy at the time of writing (p. 112-13). Around the same time, the national archives of Botswana had no policies for the management of electronic records (Keakopa 2006, p. 255).

We can also examine the lack of policies on a more granular level. For example, although Gaborone City Council possesses a Records Management Unit, it lacks a records management policy or an e-record policy (Tshotlo and Mnjama 2010, p. 10-11). The authors recommend such a policy's creation (p. 19). The Gaborone Magisterial District lacked a records management policy as of 2012 (Mosweu 2012, p. 78). Labour organizations in Botswana also lack records policies, as the legislative framework for records does not provide guidance on setting policies. For labour organizations that desire such policies, the authors of the study in question recommended that policies be drawn from other countries like South Africa, the UK, USA, and Australia (Kalusopa and Ngulube 2012, p. 12). Other organizations that lacked records policies include the Botswana Meat Commission (Mnjama 2000, p. 73) and the MLHA (Moatlhodi 2014, p. 62, 64).

As part of the National E-Government Strategy (Botswana Government 2011), an e-Government Technical Blueprint and Rationalisation Plan will apparently "facilitate[e] the review and promulgation of policy and service delivery standards such as […] Electronic Records and Document Management" (p. 23). This gives some hope for future policy improvement. Unlike legislation, where Botswana has clear signs of continued improvement, policy is an area of weakness for Botswana.

On a tangentially related note, Mutula and van Brakel (2006) found that many small enterprises in Botswana had no information management policies. Although information management constitutes a separate discipline from records management, they are often interrelated in small organizations (Shepherd and Yeo 2003, p. 18)

Lack of Supporting ICT Policies

Lack of ICT policies is a dangerous problem identified by many writers examining Africa. Ngulube (2004) argues that although ICT implementations in sub Saharan Africa have facilitated access to information, they have also made the long-term preservation of that material much more difficult (p. 152). Policies are required to ensure ICT and RM interact effectively. In the Botswanan context, Botswana's E-Government Strategy (Botswana Government 2011) does include specific reference to archives and records management, showing that the government is at least partially aware of the concerns outlined by Ngulube (2004) that ICTs and ARM in sub Saharan Africa are not well integrated. Keakopa (2006) takes a very different view and argues that ICTs are well integrated with digital recordkeeping in Botswana, and that the future improvement of Botswana's ARM relies on policies and staffing (p. 213-214). These author's opinions diverge, but many others identify a lack of ICT policies as a problem.

Moloi and Mutula (2007) describe Botswana's ICT infrastructure as well developed, (p. 299-300), but for it to aid in effective recordkeeping requires development of policies for digital records and training (p. 302). Mosweu (2012), in describing the ICT initiative of the Court Records Management System, notes that its effectiveness is hampered by a lack of digital records policies and access policies, (p. 81) as well as a lack of retention and disposition scheduling (p. 84), and continuous training (p. 81-2). Mutula and Kalaote (2010) show that Botswana's ICT policy makes no provision for the use of open source software, and partly as a result, use of open source software in the public service is low (p. 69). These authors identify lack of policies as one of the reasons for low use of open source software (p. 74), as well as lack of ICT skills (p. 77). Although ICT adoption in Botswana is high, it is hampered by problems of policy that have not been addressed in a systematic way.

Lack of Digital Records Management

Institutions across Africa may be managing records manually and generating digital records. However, they may not be managing their digital records, either manually (by printing them) or in an electronic environment. Many African nations adopt ICT infrastructure without strong records management or digital records management in place (Asogwa 2012, p. 203). Keakopa (2002) says of ESARBICA that:

> "Electronic records programmes have to be made core functions of the national archives for it to succeed. This should be clearly stated in the archival legislation so that the archives could have authority to manage electronic records throughout their life cycle and have their services accepted by those they work with. The archivist's contributions in drafting legislation cannot be overemphasized." (p. 47).

Many countries in sub Saharan Africa have not been addressing digital records (Ngulube 2004, p. 152). Most sub Saharan archives failed to address electronic record keeping in the 1990s (Tough 2009, p. 194). In Botswana, the situation is broadly similar. According to Moloi and Mutula (2007), digital records management in Botswana is in its infancy (p. 294), but examples of digital RM do exist. One area where digital RM is happening is noted by Keakopa (2006), who found that the Botswana Ministry of Health was generating digital records in accounting, finance, human resources and health care, and used Microsoft applications and a MEDITECH Oracle software package to manage them (p. 153-4). However, emails were not being captured as records (p. 154). Much of the actual management of records is still performed manually for legal reasons (p. 155-6).

The IRMT (2008) found that in the case of Botswana's Ministry of Land and Housing's ICT-based land systems, knowledge about how to capture and preserve digital records was low, with no evidence that these were being taken into consideration in the design of systems (p. 15-6). Additionally, paper recordkeeping at the Ministry was poor, and there was little understanding of the interconnection between paper and digital records that the Ministry was generating (p. 16). Moloi (2009) found "a lack of defined records management and e-archiving infrastructure" in the public service in Botswana (p. 114). Tshotlo and Mnjama (2010) found that Gaborone City Council has a records management unit (p. 20), but that there is no link between ICT utilized there and this unit (p. 30). Digital records are being generated there, but staff are generally not aware of this (p. 31). Labour organizations in Botswana have been slow to adopt ICTs and have generally poor digital records readiness (Kalusopa 2011 p. 213; Kalusopa and Ngulube (2012, p. 12). Mosweu (2012) found that a lack of policies and expertise hampered digital RM in Botswana (p. 302). The Ministry of Labour and Home Affairs participated in the National Archives & Records Management System (NARMS) EDRMS project, but that guidance from BNARS to ministry staff had been limited (Moatlhodi 2014, p. 68-9).

The state of digital RM in Botswana presents us with contrasts. Although in some cases it exists, it may be partial or limited. Moatlhodi (2014) sums up the state of digital RM well by arguing that at the time of writing, the overall records system in Botswana was a hybrid manual and electronic practice (p. 123). Although Botswana has good ICT infrastructure, forward-looking and active policymaking, and strong educational infrastructure on which to draw, it has not effectively capitalized on these strengths when it comes to digital ARM.

Enterprise-wide System and ECM Implementations

Despite some of the key strengths and weaknesses noted above, Botswana possesses a good ICT infrastructure, widespread use of ICT in the public service, and progressive plans for improvement. A number of these ICTs constitute enterprise-wide systems and

potentially Enterprise Content Management applications, or ECMs. ECMs have been described as:

> "The strategies, methods and tools used to capture, manage, store, preserve and deliver content and documents related to organizational processes. ECM tools and strategies allow the management of an organization's unstructured information, wherever that information exists." (AIIM 2010)

ECMs manage all kinds of relevant information for an organization, including items that may be records. ECMs may have a recordkeeping component, or they may require intervention to identify and capture records. Enterprise-wide systems are similar to ECM applications but may lack certain functions. Botswana's enterprise-wide system and ECM implementations are complicated by the legislation, policy and staffing challenges described above, but remain good infrastructure on which to build towards a public service that manages digital records efficiently and effectively. Enterprise-wide system and ECM implementations often rely on cloud computing. Not enough information could be gleaned from this review to determine if any of the systems or ECMs described below were hosted in the cloud.

ECM Descriptions

Among a number of examples, the most important enterprise-wide system in the Botswana public service is the Government Data Network (GDN). The GDN is described by the government of Botswana as the "basic technology platform for the rollout of e-Government services" (Botswana Government 2011 p. 8). Most important for records management is the implementation of a NARMS by BNARS. Botswana's e-government strategy describes the purpose of this program as "to provide on-line management of all government information" (p. 15). Moatlhodi (2014) provides further context by noting that this application is an EDRMS based on the off-the-shelf HP TRIM service (p. 4). Another important set of enterprise-wide systems are the various systems Botswana has implemented in an attempt to manage its lands. An IRMT case study (2008) notes four electronic land management information systems – a Land Inventory for Tribal Land Boards of Botswana (LYNSIS), a Botswana Land Integrated System (BLIS), and finally a State Land Information Management System (SLIMS) and a parallel Tribal Land Information Management System (TLIMS) (p. 10). All have attempted to address various aspects of land information management. At the time of the IRMT report, SLIMS and TLIMS were current. The Department of Tertiary Education Financing possesses a Student Loan Management System (Olefhile *et al* 2014 p. 242). Little further information was available. Botswana's Ministry of Trade and Industry possesses an EDRMS known as the Document Management Workflow System (DWMS) (Moatlhodi 2014 p. 72; Olefhile et al 2014). Mosweu (2012) notes that Botswana's Department of the AOJ possesses a Court Records Management System (CRMS). The *Maitlamo* ICT policy document briefly describes a Police Private Network (p. 4). Its juxtaposition with the aforementioned GDN would suggest that they are related in some way. Botswana's E-Government Strategy (2011) also presents a

multitude of other potential enterprise-wide systems and a complex diagram showing a variety of systems and their proposed linkages (p. 15, 17). Nkwe (2010) provides further context by showing which of these systems are for certain ICT based (p. 44), although whether only some or all of the items shown in the E-Government Strategy diagram are computerized is not clear.

Context

In this section, each identified enterprise-wide system will be contextualized with regard to ARM integration. The identified Botswanan enterprise-wide systems are subject to many of the challenges discussed in this paper. As established earlier, these systems can include records management functions or require intervention to determine and manage records. These functions and interventions are noted where they can be determined.

Government Data Network

Although it forms an important part of Botswana's information infrastructure, there is little contextualizing information available about the GDN. The National E-Strategy (Botswana Government 2011) notes that it is a "basic technology platform for the rollout of e-Government services," as well as the fact that it is 20 years old (p. 8). The strategy suggests that upgrades are both necessary and forthcoming.

It is difficult to describe the RM challenges that the GDN faces due to the lack of specific information on its workings. *Maitlamo* (2004) does note that it provides "connectivity to all government departments and agencies via high-speed Internet and satellite links" (p. 4), suggesting that it is an infrastructure tool rather than a precise content management system.

National Archives and Records Management System

NARMS is an ARM-focused initiative that aims to provide ARM for Botswana. Moatlhodi (2014) gives the most information about this application, including that it is based on the HP TRIM platform, and is essentially a nationwide EDRMS (p. 4).

With that in mind, policy is the challenge that affects NARMS. Because BNARS is responsible for public sector ARM, clear policies are required at the national, ministerial, and other levels to ensure its smooth functioning and effective ARM. The ARM implications of NARMS are that with good policies and other supports, it is well-placed to begin managing the electronic records that other public sector organizations are producing. It also certainly constitutes an enterprise-wide system with a records management component. Staffing is also a concern, as EDRMS implementations are often noted as requiring continuous training (Mutimba 2014, p. 52-3).

Electronic Land Management Information Systems

Botswana has long been interested in electronic land information systems, and has made multiple attempts to institute working applications. This interest was motivated by citizen complaints regarding Land Boards, which administer land in Botswana (IRMT 2008 p. 7). The first attempt was LYNSIS, which never received a full implementation due to training problems (p. 10). This was followed by BLIS in the mid-1990s. Designed to improve land allocation management, BLIS was Oracle-based and involved inputting information from paper files, not digital records. BLIS was ultimately jettisoned due to its inability to interoperate with other systems and concerns about data quality (p. 10). In 2002, The State Land Information Management System (SLIMS) was introduced, dealing with the "allocation of plots of land and to assist in the management of state land." It "aimed to interface with systems in the Deeds Registry, Department of Surveys and Mapping, Botswana Housing Corporation and the Department of Town and Regional Planning" (p. 10). SLIMS included some data from BLIS, which had been "archived" in some fashion (p. 10). Finally, and concurrently, Botswana created the Tribal Land Information Management System (TLIMS). TLMIS "automate[s] land allocation at the Land Board level" and "process[es] applications [and] manage[s] tribal land electronically." It also facilitates data sharing between land boards and other government departments (p. 10). Further information is available regarding TLMIS, including that it used "MS SQL 2000 as the backend and Visual Basic as the front end" (p. 11). TLMIS is described as "distributed" implying a cloud-like service, although the IRMT also notes that the intention is to host it on a server at the Department of Land Board Services (p. 12).

The challenge most applicable to Botswana's land systems is training. With the use of multiple systems and system failures in the past, it is likely that staff may not be committed to the use of the current systems, and may neglect training.

Botswana's land systems clearly constitute enterprise-wide systems, as they manage multiple kinds of information related to land. However, it does not appear that records management is a major concern. The IRMT (2008) notes that it was "unclear how electronic records produced by TLIMS, or indeed any other new government information system would be managed in the longer term" (p. 17). The authors of the report call for a prominent role for BNARS. It was unclear from the literature whether these systems come under the recordkeeping purview of NARMS.

Student Loan Management System

The Student Loan Management System is an e-government initiative of the Department for Tertiary Education Financing (Mosweu *et al* 2014). Very little information was available about this initiative other than that it managed various kinds of data related to student loans, and that it was underutilized due to poor staff technical skills (p. 242). It may constitute an enterprise-wide system.

Document Management Workflow System

The DWMS is an EDRMS implementation at Botswana's Ministry of Trade and Industry (Moatlhodi 2014 p. 72; Mosweu et al 2014). Little further information is available. As an EDRMS, it is likely acting as an enterprise-wide system. The challenge it would appear to face is decentralization, as other writers have noted the existence of BNAR's NARMS EDRMS. How the two interoperate would require further research.

Court Records Management System

The CRMS is part of the Botswana Department of the AOJ. Mosweu (2012) describes its purpose as to "improve service delivery […] through its capacity to capture, store and retrieve accurate and up to- date case files. The system was generally meant to expedite the process of case management and thus improve the delivery of justice in Botswana" (p. 12). It was first adopted in 2006 (p. 56).

Challenges that the CRMS faces include a general lack of digital RM. Mosweu (2012) notes that no archival appraisal has been performed on the records (p. 74), that BNARS was not prepared to accept electronic records (p. 77), and that the Department lacked an RM policy and disposition schedule (p. 84). Another challenge is collaboration, as Mosweu(2012) notes that some stakeholders cannot access relevant case files (p. 81). Finally, Mosweu notes that continuous staff training is required for the system to be effective (p. 84).

The CRMS likely constitutes an enterprise-wide system. The challenges noted above make it unclear how records held in the CRMS are managed in the long term.

Police Private Network

The Police Private Network is a system mentioned by the Botswana Government (2004) in conjunction with the GDN, and no further information is provided (p. 4). It is likely similar to the GDN and subject to the same challenges and ARM implications.

Others Potential ECMs

A large number of other potential ECMs are noted by Nkwe (2010) and in Botswana's E-Government Strategy (Botswana Government 2011). However, no additional information is provided for any of these systems and thus no comments of value can be added here. However, it would appear that Botswana is well served by a large number of public service ICTs that may also be enterprise-wide systems.

Conclusions

Enterprise-wide systems exist in Botswana and are a key part of the public service. They are aspects of Botswana's deep and continued interest in the expansion of its e-government services. After examining Botswana, we can make several statements regarding the state of its recordkeeping. For one thing, digital records in Botswana's public institutions are managed in a hybrid manual-electronic system, with opportunities for improvement and increased focus on digital RM. For another, the legal context of ARM in Botswana is strong at the national level, but some key pieces of legislation, such as FOI and Access to Information, remain to be implemented. Botswana's ARM education programs, although recognized as strong, have not been effectively utilized for the benefit of the public service, most notably due to failures on the part of government to retain staff. Finally, e-government ICTs have penetrated many or most of Botswana's public sector institutions, even if they do not necessarily interoperate with ARM systems.

Although this study has identified a large number of enterprise-wide systems in the public service of Botswana, it was unable to discern whether any of them were cloud-based. Although their connections to ARM practice were not always clear, Botswana has a stated interest in tying its ICT and e-government initiatives to ARM (Botswana Government 2011), providing hope for progress in this area.

The challenges that Botswana faces regarding its ARM, e-government, and ICT initiatives are important, but not insurmountable. The Government of Botswana seems to be aware of them, and its willingness to take on difficult reform issues provides evidence that the future for ARM practice in Botswana is likely to be bright.

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