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Author:	InterPARES Trust Project
Writer(s):	<p>Trywell Kalusopa (University of Namibia, Namibia) – Lead Researcher Tshepho Mosweu (University of Botswana) – Researcher Shadreck Bayane (Independent consultant) - Researcher Mpho Ngoepe (University of South Africa) – Researcher Shadrack Katuu (University of South Africa) - Researcher Mark Penny (University of British Columbia) - Graduate Research Assistant Robin Konig (University of British Columbia) - Graduate Research Assistant</p>

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Abbreviations

AIIM	Association for Information and Image Management
AOJ	Botswana's Department of the Administration of Justice
ARM	Archives & Records Management
BLIS	Botswana Land Integrated System
BNARS	Botswana National Archives & Records Service
BTA	Botswana Telecommunications Authority
BTC	Botswana Telecommunications Company
CRMS	Court Records Management System
DWMS	Document Management Workflow System\ECM Enterprise Content Management
EDRMS	Electronic Document & Records Management System
ESARBICA	Eastern and Southern Africa Regional Branch of the International Council on Archives
FOI	Freedom of Information
GDN	Government Data Network
HP TRIM	Hewlett Packard Total Records and Information Management
ICT	Information & Communication Technologies
IRMT	International Records Management Trust
LYNSIS	Land Inventory for Tribal Land Boards of Botswana

MLHA Ministry of Labour and Home Affairs
NARMS National Archives and Records Management System
NARS National Archives & Records Service of South Africa
OECD Organisation for Economic Co-operation and Development
RM Records Management
SADC South African Development Community
SLIMS State Land Information Management System
TLIMS Tribal Land Information Management System
WEF World Economic Forum

1. 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 from the perspective of the state of its public service. For this reason, coupled with its well-regarded archival service, it offers 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 through ICTs. As part of this transition, Botswana is grappling with a change from manual to digital recordkeeping practices where ICTs might support records or generate them. ICTs that manage or contain multiple kinds of records are 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)

ECMs may generate digital records, manage them if the ECM is optimized for recordkeeping, or intervene to both identify records as records and place them in an appropriate environment to manage them (such as an Electronic Records and Document Management System, or EDRMS). Additionally, some organisations may utilise less specific enterprise-wide systems that perform many of the functions of dedicated ECMs.

The goal of this review is to understand:

- The management of digital records in Botswana's public institutions;
- The legal and regulatory context of digital records;
- The current technological framework within public-sector institutions for digital records; and
- The technological environments that generate records.

This review particularly examines enterprise-wide systems and ECMs in Botswana's public service and attempts to discern whether these instances are based in cloud-computing. It draws on a bibliography of over 50 published articles 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 within acknowledged ARM challenges in Botswana and Africa.

1.1 Historical Context

Today's Republic of Botswana came into being in 1964, when it gained independence from the United Kingdom. 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. Today, BNARS manages all government Records Management Units (RMUs) (Ramokate and Moatlhodi, 2010, p. 68).

Between independence and today, and particularly in the 1960s and 1970s, BNARS faced several challenges. Keakopa (2010) identifies collection of oral traditions; repatriation of records from overseas; records backlogs; training and retention issues; legislation; preservation, digitisation, 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 remained relatively stable and economically successful, and has made visible improvements in its e-government and ICT initiatives. In 1997, Botswana created a national vision which made provisions for usage of ICTs national development

(Government of Botswana 1997) and a national ICT policy in 2007 (Government of Botswana 2007). The policy came to be popularly known as Maitlamo Policy. Its aim was to create a stable and competitive market and providing an investor-friendly ICT legal and regulatory environment. In 2011, the government created an E-Government Strategy (set to run between 2011 and 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 these initiatives, Botswana 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 Information and Communication Technology Report of 2016* currently ranks Botswana at 101st out of 139 countries globally in terms of network readiness. Investments in the ICT infrastructure in the form of increased bandwidth capacity via connections to two undersea cables: the Eastern African Submarine Cable System [EASSy] and the West African Cable System [WACS]) (Esselaar & Sebusang 2013).

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 that ICTs provide (Kalusopa, 2010), and by investing in technical infrastructure and human-resource development (Botswana Government, 2004). However, these benefits are not yet fully realized (Mosweu, Mutshewa and Bwalya, 2014).

Botswana still lags in utilising information and communication technologies for delivering e-government services and creating a comprehensive strategy to do so (Nkwe 2010). Keakopa (2006) identifies the lack of clearly laid out strategies for managing electronic records. An assessment carried out in 2004 showed that Botswana's level of e-readiness is a study in extremes. Botswana has a world-renowned legal system and sophisticated Government Data Network and Police Private Network, but members of the

government and private sector describe telecommunications service quality as inadequate (Botswana Government, 2004). ARM literature also reflects this. 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 and in rural areas (p. 299). In short, Botswana's ICT adoption and e-government development can be characterized as uneven.

1.2 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 with regard to challenges and opportunities are thus closely tied to BNARS (Keakopa, 2006).

Botswana faces several current challenges to improving its ARM practices, described broadly as legislative, staffing, organizational, policy, and practice issues.

- Legislation issues:
 - Inadequate digital records legislation; and
 - Lack of Freedom-of-Information (FOI) and Access-to-Information Legislation.
- Staffing issues:
 - Inadequate training and lack of trained staff;
 - Lack of ARM professionals in ARM positions, and staff-retention problems; and
 - Problems regarding professional collaborations.
- Decentralization of ARM within institutions.
- Policy issues:
 - Lack of policies; and
 - 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. The following sections show that many authors have identified poor legislation, inadequate staffing, decentralization, lack of policy, and no digital RM as issues across ESARBICA.

1.3 Goals of Enterprise-Wide System Implementations in Botswana

Enterprise-wide systems and ECM application implementations are closely tied to improving government public services through the introduction of e-government. In cases where e-government coordinates with 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; and
- Anticorruption strategies and services.

Citizens can receive all these features regardless of their socioeconomic status (Salamntu and Seymour, 2015; Kemoni, Ngulube and Stilwell, 2007; Bwalya, Sebina and Zulu, 2015). With these benefits in mind, Botswana and countries like it attempt to adopt enterprise-wide systems and ECMs to improve their e-government services.

2. Legislation

Legislation forms the basis for all public-service activity in any country, and Botswana is no exception. Many authors have identified problems with 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 outdated legislation hampers digital RM (pp. 201–202). In Namibia, Barata, Kutzner, and Wamukoya (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) conclude 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 the courts (pp. 37–8). Outdated legislation has limited the ability of ARM professionals in ESARBICA to deal with digital records (Keakopa, 2002, p. 46). In a later article, Keakopa (2010) argues that archival legislation in ESARBICA does not provide for the records life cycle and has weak mandates for ARM professionals, as well as weak definitions of records that do not apply to digital records (p. 62). Keakopa also notes that these outdated acts do not integrate well with existing freedom-of-information (FOI) acts (p. 62–63). Ngulube (2004) argues that legislation must address digital RM specifically (p. 152), finding 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) identify as a problem weak legislation that does not account for digital records in sub-Saharan Africa (pp. 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).

Many legislative problems affect ESARBICA nations and Africa as a whole. Botswana's case reflects two major themes: a need to elaborate on its digital records legislation, and a need for FOI and Access-to-Information Legislation.

2.2 Inadequate Digital Records Legislation

The Botswana Government (2004) has identified modification of data as a problem it must address through legislative reform, as well as 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). The National ICT Policy also mentions an Electronic Documents Act (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) to give 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 Moloji (2009) determined that digital records were not admissible as evidence of business transactions, due to lack of legislation for managing digital records (p. 109). Although legislative reform was occurring, Moloji argued that poor training of ARM professionals would hamper improvement (pp. 114-115). By 2010, Botswana had recently updated its archival legislation, but these changes did not completely address all digital records management processes. Examples of ameliorating legislation dealt with ‘capture, retention, disposal and custody of archival electronic records’ (Keakopa, 2010, pp. 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 (2015) observed that although Botswana’s ARM relevant laws did ‘provide . . . the legal framework for records management,’ it did not extend to digital records (p. 62–63).

Ultimately, Botswana has begun making some of the changes the 2011 E-Strategy document called for. Ngoepe and Saurombe (2016) noted the passing of an Electronic Records (Evidence) Act in 2014 that ‘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.

2.2 Lack of FOI and Access-to-Information Legislation

FOI and Access-to-Information legislation often is associated with e-government initiatives. Despite a forward-looking approach to legislation, Botswana currently possesses acts unrelated to either type of legislation.

The government has some awareness of the problem, noting in its 2004 report that personal privacy, private data, and access to information were areas in need of legislative

reform (Botswana Government, 2004, pp. 9–11). This was partly to allow greater economic integration of Botswana with the Organization for Economic Cooperation and Development (OECD) and the European Community (pp. 24–25).

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, Sebina, and Zulu (2015) noted that as of 2014, Botswana had not enacted an FOI law (p. 137).

Although Botswana does not currently possess FOI or Access-to-Information law, government publications note this deficiency. Like the Electronic Records Act of 2014, revised or new legislation could possibly appear to deal with the problem.

3. Staffing

Staffing is a problem that affects nations in ESARBICA, as it does all of Africa. 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 often remained untrained, and those that had digital-records skills often left their jobs for better positions (Barata, Kutzner and Wamukoya, 2001, p. 36). Critical shortages exist in sub-Saharan Africa of staff trained in the management of digital records (Ngulube, 2004, p. 148). Furthermore, effective environmental preservation in sub-Saharan Africa is deficient and requires ongoing staff training (Ngulube 2005, pp. 163–164). One solution proposed to address the skills problem is better staff-training programs focused on technology and digital records (Keakopa, 2002, p. 46–47). Another is collaboration on training with local universities (Ngulube and Tafor, 2006, p. 76). Ngulube (2007) argues that sub-Saharan African ARM education focuses too much on ‘generic skills of information management’ and that some focus on preservation is required (p. 164).

Finally, Keakopa (2010) examines the dual problems of staff training and retention in ESARBICA throughout the 20th century. In Botswana’s case, staff retention is described as a ‘crisis,’ noting nonetheless that the University of Botswana possesses the region’s most important academic training centre (pp. 59–62). Asogwa (2012) notes that most

ARM professionals in Africa lack skills in digital RM and dedicated ARM training (pp. 202–203). 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 Botswana, staffing issues can be subdivided further into training and lack of professionals, retention, and collaboration.

3.1 Training

The International Records Management Trust (IRMT) (2008) conducted a study and found that most records managers in Botswana had no formal training. BNARS was working to provide trained records managers to MDAs based on its own training programs. Besides offering dedicated academic programs, the University of Botswana has also provided professional training to public-service staff. However, diploma and certificate programs aimed at public-service staff were being phased out in favour of the master’s program.

Moloi and Mutula (2007) noted plans to train BNARS staff in digital records, but also found problems regarding RM in ministries because many RM staff had been drawn from other positions with no prior training. In general, computer literacy was lacking in BNARS (p. 298–299). More broadly, Kalusopa and Zulu (2009) found that heritage institutions in Botswana lacked digital preservation skills (p. 105–106). In a comparison of BNARS and South Africa’s National Archives & Records Service (NARS), Ngoepe and Keakopa (2011) found that both lacked trained staff, and identified high staff turnover in South Africa and Botswana (pp. 154, 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 (pp.84–85). Mampe and Kalusopa (2013) found both users and RM professionals of the Botswana Corporate Services of the Ministry of Health lacked records-management training (p. 20). Eighty percent of records staff at the Ministry of Labour and Home Affairs (MLHA) had no on-the-job training (Moatlhodi, 2015, p. 69).

Botswana's training 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 for ameliorating the situation.

3.2 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 workforce 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 among ESARBICA ARM professionals (p. 75). In Botswana, a lack of skilled personnel and an inability to retain staff due to pay issues have hampered the activities of BNARS (Ramokate and Moatlhodi, 2010, p. 77–78). Although BNARS has previously sent staff for further education in ARM Master's programs, these students thereafter abandoned BNARS for better paying opportunities (IRMT, 2008, p. 15).

3.3 Professional Collaborations

Better professional collaboration is a common desire of scholars studying ARM in Africa. Ensuring effective ARM requires understanding between ARM professionals and their departmental managers (Barata, Kutzner and Wamukoya, 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)

Elsewhere, Keakopa (2010) reiterates the sentiments above by calling for strong partnerships not only between ARM professionals, but also with other stakeholders such as ICTs and cultural institutions (pp. 71–72). On a subtler note, Kemoni, Ngulube, and Stilwell (2007) argue that archives and records-management professionals need close collaboration to realize all possible benefits of records (p. 16–17). 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 as a problem in literature regarding Botswana, its presence in the general literature would lend credence to the idea of taking it into consideration in the context of Botswana. Its absence from the specific literature on Botswana shows that this may have potential for future research.

4. 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 in which some ministries attempted to create customer relationship management, records management, or document management solutions for their own department, without considering effects on 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).

5. Policy

Many authors identify the problem of a lack of RM policies. Discussing Africa generally, Tough (2004) argues that the policies South Africa's NARS has developed can serve as a starting point for other nations looking 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).

5.1 Lack of Policies

The state of recordkeeping policy in Botswana parallels findings from the rest of Africa. Moloji and Mutula (2007) found that Botswana had no policy for records management or digital records management (p. 298). The same authors also discussed Botswana's ICT policy in its draft phase and claimed that it only addressed archives and not records management, a problem that the final version would have addressed. In a survey of digital heritage institutions in Botswana, only 14.3% 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 other articles, Kalusopa (2011, 2008) also found that labour organizations in

Botswana possessed no RM policies (p. 209), nor any 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 effective e-government in Botswana requires greater attention to paper and digital records (p. 18).

Moloi (2009) states that at the time of writing, Botswana did not possess a records or digital records policy (p. 112–13). Around the same time, the national archives of Botswana had no policies for managing 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 both records-management policy and e-record policy (Tshotlo and Mnjama, 2010, p. 10–11). The authors recommend creating such a policy (p. 19). The Gaborone Magisterial District lacked records-management policy as of 2012 (Mosweu, 2012, p. 78). Labour organisations in Botswana also lack records policies, as the legislative framework for records provides no guidance on setting policies. For labour organisations that desire such policies, the authors of the study in question recommend that policies be drawn from other countries including South Africa, the UK, the USA, and Australia (Kalusopa and Ngulube 2012, p. 12). Other organisations that lacked records policies included the Botswana Meat Commission (Mnjama, 2000, p. 73) and the MLHA (Moatlhodi 2015, 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 shows clear signs of continued improvement, policy is a weak area 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 discipline separate from records management, they are often interrelated in small organisations (Shepherd and Yeo, 2003, p. 18).

5.2 Lack of Supporting ICT Policies

Many writers examining Africa identify lack of ICT policies as a dangerous problem. 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). Ensuring that ICT and RM interact effectively requires policy.

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 at least partially recognizes the concerns that Ngulube (2004) outlines regarding the lack of ICT and ARM integration in sub-Saharan Africa. 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 (pp. 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 its ability to aid in effective recordkeeping requires development of policies for digital records and training (p. 302). Mosweu (2012) describes the ICT initiative of the Court Records Management System, noting that lack of digital records and access policies (p. 81), retention and disposition scheduling (p. 84), and continuous training (p. 81–82) hamper its effectiveness.

Mutula and Kalaote (2010) show that Botswana's ICT policy makes no provision for the use of open-source software, and as a partial 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 limited use of open-source software (p. 74) and poor or no ICT skills (p. 77). Although ICT adoption in Botswana is high, failure to address problems of policy in a systematic way hampers its full use.

6. 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 recordkeeping in the 1990s (Tough 2009, p. 194). In Botswana, the situation is broadly similar. According to Moloji and Mutula (2007), digital records management in Botswana is in its infancy (p. 294), but examples of digital RM do exist. Keakopa (2006) notes one area where digital RM is in use, having found the Botswana Ministry of Health generating digital records in accounting, finance, human resources, and health care, and using Microsoft applications and a MEDITECH Oracle software package to manage them (pp. 153–154). 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 system design had taken account of these functions (pp. 15–16). Additionally, paper recordkeeping at the Ministry was poor, with little understanding of the interconnection between paper and digital records that the Ministry was generating (p. 16). Moloji (2009) found 'a lack of defined records management and archiving infrastructure' in the public service in Botswana (p. 114). Tshotlo and Mnjama (2010) found that the Gaborone City Council records management unit (p. 20) had no

link to ICT utilised there (p. 30). Although generating digital records, staff was generally unaware 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 guidance from BNARS to ministry staff had been limited (Moatlhodi 2014, p. 68–69).

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.

7. Enterprise-Wide System and ECM Implementations

Despite some of the 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 potential Enterprise Content Management applications, or ECMs.

ECMs have been described as 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 organisation, 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 resemble ECM applications but may lack certain

functions. Legislation, policy, and staffing challenges complicate Botswana's enterprise-wide system and ECM implementations, but they remain good infrastructure on which to build toward 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.

7.1 ECM Descriptions

Among other examples, the most important enterprise-wide system in the Botswana public service is the Government Data Network (GDN). The government of Botswana describes the GDN 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 (2015) 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 comprises the various systems Botswana has implemented to try to manage its lands. An IRMT (2008) case study notes four electronic land-management information systems: the Land Inventory for Tribal Land Boards of Botswana (LYNSIS), a Botswana Land Integrated System (BLIS), and a State Land Information Management System (SLIMS) with 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 (Mosweu, Mutshewa and Bwalya, 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, 2015, p. 72; Mosweu, Athulang, and Bwalya, 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 (Mosweu 2012, p. 4). Its juxtaposition with the 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 (pp. 15, 17). Nkwe (2010) provides further context by showing which of these systems are confirmed to be ICT based (p. 44), although whether all items shown in the E-Government Strategy diagram are computerized is not clear.

7.2 Context

In this section, each identified enterprise-wide system will be contextualized from the perspective of ARM integration. The identified Botswana 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, little contextualizing information is available about the GDN. The National E-Strategy (Botswana Government, 2011) calls it a 'basic technology platform for the rollout of e-Government services,' commenting that it is 20 years old (p. 8). The strategy suggests that upgrades are both necessary and forthcoming. Describing the RM challenges that the GDN faces due to the lack of specific information on its workings is difficult. Government of Botswana (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 (2015) 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, ensuring its smooth functioning and effective ARM at the national, ministerial, and other levels requires clear policy. 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, pp. 52–53).

Electronic Land Management Information Systems

Botswana has long been interested in electronic land information systems and has made multiple attempts to institute working applications. Citizen complaints regarding Land Boards, which administer land in Botswana, motivated this interest (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). TLIMS ‘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 TLIMS, including that it

used ‘MS SQL 2000 as the backend and Visual Basic as the front end’ (p. 11). TLIMS is described as ‘distributed,’ implying a cloud-like service, although the IRMT (2008) 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 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, Mutshewa and Bwalya, 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 underutilised due to poor staff technical skills (p. 242). It may constitute an enterprise-wide system.

Document Workflow Management System

The DWMS is an EDRMS implementation at Botswana’s Ministry of Trade and Industry (Moatlhodi, 2015. p. 72; Mosweu, Mutshewa and Bwalya, 2014). Little further information is available. As an EDRMS, it is likely acting as an enterprise-wide system. The challenge it appears 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 current 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 notes that some stakeholders cannot access relevant case files (p. 81). Finally, Mosweu notes that for the system to be effective requires continuous staff training (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 likely resembles the GDN, subject to the same challenges and ARM implications.

Others

Nkwe (2010) and Botswana's E-Government Strategy (Botswana Government, 2011) note many other potential ECMs. However, no additional information is provided for any of these systems and thus no comments of value can be added here. However, it appears that Botswana is well served by several public service ICTs that may also be enterprise-wide systems.

8. 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. First, 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. Second, 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 utilised 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 review has identified several enterprise-wide systems in the public service of Botswana, it is unknown whether any of them were cloud-based. Although their connections to ARM practice were not always clear, Botswana has a stated interest in connecting 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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