

Digital preservation regulatory frameworks for e-government infrastructure in selected Ministries of Botswana

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Abstract

This study assessed the digital preservation regulatory frameworks for digital records infrastructures in selected ministries in Botswana. Several research studies have been conducted but they did not clearly provide the regulatory frameworks affecting the preservation of digital records in the Botswana public service. The study adopted a pragmatic paradigm and embedded mixed method approach, whereby a cross-sectional survey and case study were deployed in each of the six selected ministries as a unit of analysis. Few ministries had implemented electronic records management systems that were not capable of preserving digital records even though they were expected to provide reliable, authentic and understandable records. The results revealed Botswana's weak legal system for digital records preservation.

Keywords: Botswana, digital preservation, e-government, regulatory frameworks, infrastructure, ministries

1. Introduction

The use of information communication technologies is an integral part of the 4th industrial revolution; an era marked significantly by a fusion of technologies. E-government is recognised across the world as one of the efforts of improving the quality of life by ensuring that governments provide good services, improve the quality of life in an extremely convenient and efficient way. Throughout the world, e-government has widely been recognised not only by researchers, but also by international organisations. The World Bank (2020:6) states that most governments embarked on their digital change journey to improve administrative and operational efficiency by introducing the 'e-government' model, which mainly focused on putting e-services online through the usage of ICTs. According to the United Nations (2020:44-45), Africa made significant progress between 2018 and 2020, demonstrating the region's ongoing digital transformation. In Africa, the four countries leading in e-government development as per their ranking of e-government with values above the global average of 0.60 are Mauritius, South Africa, Tunisia and Seychelles.

According to Bwalya (2018:10), there is still a lack of sustainability in the implementation of e-government as many countries in Africa are still facing challenges in the adoption of digital technologies. Katuu (2012), Luyombya (2011), and Mampe and Kalusopa (2012) are of the view that the aftermath of e-government initiatives and increasing digitisation of government business operations, public sector authorities have come to rely upon a growing array of communication technologies to create, exchange, and store information from traditional paper-based filing systems, to structured databases, 'unstructured' content management

systems, social media platforms, web technologies, and mobile platforms. As a result, public sector authorities have come to rely upon a growing array of communication technologies to create, exchange and store information from traditional paper-based filing systems, to structured databases, 'unstructured' content management systems, social media platforms, web technologies and mobile platforms. In Botswana, the e-government vision is to become an integrated government by providing collective access to services in a convenient, efficient, transparent and reliable way (Government of Botswana 2015). In order to efficiently and effectively deliver public services to the people, the government has embarked upon the automation and integration of processes through the e-government programme (Government of Botswana 2012). The Government of Botswana invested a lot of money since the inception of e-government project. There are several strategies that have been developed as the core building blocks of e-government, but they did not take into consideration the issues of digital preservation and digital continuity of information for posterity.

Several regulatory frameworks are used in Botswana for the management of records. Simon and Mosweu (2019:71) state that records and archives legislation is a fundamental component of the wider legislative base of an accountable and effective government. Ngoepe and Keakopa (2011) express that Botswana's archival legislation has been found to be feeble to the extent that it cannot provide guidance to advance records and archives management. The National Archives and Records Service (NARS) Act gives the director of Botswana National Archives and Records Services (BNARS) certain powers and privileges in relation to the preservation of the national documentary heritage in Botswana. According to Porogo and Kalusopa (2021:37), the NARS Act of 2007 does not state how digital records should be managed from creation to disposal. Therefore, there is a huge problem in the ministries of Botswana regarding the management and preservation of digital records, as the Act does not clearly indicate their management from creation to disposal. Furthermore, the available legislative framework in Botswana does not support digital preservation at all, even though they support the use of digital records in organisations and that led to loss of vital records.

3. Aim of the study

The aim of this study was to assess the digital preservation regulatory frameworks for e-government infrastructure in ministries in Botswana.

4. Research objective

The following were the research objectives of the study:

- To assess the regulatory framework managing digital records.
- To find out collaborative efforts made by ministries on digital preservation.
- To find out the technical expertise possessed by records professionals in the management of digital records.

5. Literature review

This section provides a discussion of the literature on the status of digital preservation infrastructure and regulatory framework for the management of digital records within the context of e-government in Botswana. It covers the nexus of e-government and digital preservation, policy, collaboration and technical expertise of other countries and Botswana.

5.1 Regulatory framework managing digital records

Additionally, Marutha (2016:28) has seen that in most African countries, the extent of records and archival law covered the fundamental model of paper-based records filing just as the document obligations, which ended up being a test to numerous authentic organisations with regard to overseeing digital records. According to Mnjama and Wamukoya (2007), the absence of organisational policies, regulations, structures and procedures has been one of the weaknesses in the management of digital records. Botswana is still grappling with how to deal with digital material preservation (Kalusopa 2018:165), which was confirmed by Porogo and Kalusopa (2021). BNARS as the advisor to all ministries in Botswana had no digital preservation policy to support the preservation of digital records. Kalusopa, Bayane and Mosweu (2017:9) express that there is a need to change the NARS Act of 2007 to incorporate the management of digital records in the country.

5.2 Digital preservation infrastructure

E-government is recognised across the world as one of the efforts of improving the quality of life by ensuring that governments provide goods and services and improve the quality of life in an extremely convenient and efficient way. Throughout the world, e-government has widely been recognised not only by researchers, but also by international organisations. The World Bank (2020:6) states that most governments embarked on their digital change journey to improve administrative and operational efficiency by introducing the ‘e-government’ model, which mainly focuses on putting e-services online by using ICT. The United Nations (2020:44-45) states that from 2018 to 2020 in Africa, there has been notable progress, which shows that the region was undergoing digital change. The Botswana public service was faced with several challenges regarding service delivery, which led to e-government programmes being undertaken inadequately. According to the National Research Council (2001:7), the development of infrastructure for digital archiving is strongly driven by the need to support multiple communities. However, it is vital to note that each community has its own requirements that will influence the content, organisation, design and services of digital archives. Ngoepe and Van der Walt (2009:10-11) express that nations like Canada have an advanced preservation infrastructure for digital records. Ngoepe (2017:11) affirms that, currently, there exists “no infrastructure to ingest digital records into archival custody in South Africa.”

5.3 Technical expertise

Note (2018) states that the archival field globally lacks people with the expertise needed to extend the digital preservation agenda. Records experts have not yet been presented to the abilities expected to oversee digital records in Africa, yet, at the same time, digital records are being produced at a quickly intensifying rate (ICA/IRMT 2016:6). Formal training opportunities for digital preservation are still rare; therefore, much is learnt on the job (Note 2018). There are global training prospects for specific research projects dedicated to the management of digital records as follows:

- InterPARES 3 developed teaching modules such as training programmes, continuing education workshops and curricula. The aim of training is to provide professionals with the competency to preserve digital heritage and protect its accuracy and authenticity. In Africa, this InterPARES research is ongoing on the management of digital records holistically.

The PERICLES project (Promoting and Enhancing Reuse of Information throughout the Content Lifecycle taking account of Evolving Semantics) is funded by the European Union, and has produced a series of online, self-instructive, stand-alone modules.

5.4 Collaboration and engagement

Collaboration for the discovery of new methods of doing things became more important due to the difficulty of digital preservation that occurred in the digital era. According to Kalusopa (2018:156), collaboration has been viewed as a key component in developing and maintaining digital records over the years. Besser (2007) holds the opinion that collaboration and engagement in preservation have been fuelled by resource sharing and knowledge dissemination. Keeping and fostering collaboration among its stakeholders are beneficial for organisations with a mission to preserve digital records (Dollar & Ashley 2013). The United Nations Educational, Scientific and Cultural Organisation (UNESCO) has been at the forefront in initiating cooperative solutions to be used to preserve digital records. These initiatives include the Joint Information Systems Committee (JISC), the Digital Preservation Coalition (DPC) and the International Federation of Library Associations and Institutions (IFLA) (UNESCO 2003). IFLA and the International Council of Archives (ICA), which UNESCO hired to provide standards for digitisation projects for public domain assets and collections (UNESCO 2003). The International Research on Permanent Authentic Records in Electronic Systems (InterPARES) is another global initiative. Research is currently advancing on various continents. The overarching goal of Team Africa is to guarantee that the knowledge obtained from their involvement in the international project produces outputs that are applicable to the African context and empower records and archives professionals based on result-oriented outcomes. Preliminary findings, however, showed that records professionals in each of those countries confront comparable difficulties in the new digital era, such as preservation (Kalusopa 2018:158). Most organisations are left out of the preservation engagement and collaboration because they cannot begin to meet national standards with restricted resources.

6. Methodology

To acquire data for the study, mixed approaches data gathering tools were used. This suggests that the researcher collected both qualitative and quantitative data concurrently and sequentially so that each type of information would support the other. The study's target population was 102 respondents from six key purposively sampled ministries. Seventy-nine questionnaires were distributed, 55 of which were completed and returned, yielding a 68% response rate, while 24 (30%) were never completed and returned. The response rate for questionnaires was 68%, which is good, as supported by Babbie and Mouton (2011). A response rate of 50% is satisfactorily, 60% is good and 70% is very good.

The ministries' respondents were coded to preserve anonymity. The respondents were coded as follows: SM 1, SM 2 and SM 3 for senior managers, ICT 1, ICT 2 and ICT 3 for IT managers, HOD RM 1, HOD RM 2 and HOD RM 3 for heads of division: records management, HOD A 1 for Head of division: archives. The coding of the respondents followed no particular order. Through interviews, information was gathered from senior managers, heads of records and archives divisions, ICT managers, records managers and records officers from the six ministries that made up the sample. Records managers and chief records officers were given surveys to complete. Formal participatory observation was carried out. The researcher collected data from the following ministries: Transport and Communication, Land Management Water and Sanitation Services, Finance and Economic

Development, Employment, Labour Productivity and Skills Development, Investment Trade and Industry, and Youth Sport and Culture.

7. Findings and discussions of the study

This section presents the findings of the study, which are presented according to the following themes: digital preservation infrastructure, policy, technical expertise, collaboration and engagement.

7.1 Regulatory framework managing digital records

According to Porogo and Kalusopa (2021:36), there are several regulatory frameworks that are used in Botswana for the management of records. Personal assessments showed that the regulatory framework that was used for the management of records in Botswana was as follows: BNARS Act of 2007, National Information and Communications Technology Policy (Maitlamo Policy) 2006, Electronic Evidence Act of 2014, Public Service Act 2008, Copyright and Neighboring Rights Act of 2000, Evidence in Civil Proceedings of 1977, Electronic Communications and Transactions Act 2014, National Security Act 2005, Public Audit Act, Public Finance Management Act, National ICT Policy and e-Government Strategy. The NARS Act, 2007, gives the director of BNARS certain powers and privileges in relation to the preservation of the national documentary heritage in Botswana. These regulatory frameworks did not have a section on the preservation of digital records, hence a gap that promotes the loss of vital records for ministries.

7.2 Digital preservation infrastructure

A digital records management programme needs to be backed by appropriate, necessary and available infrastructure to be successful (Porogo & Kalusopa 2021:102-103). During the interview with information technology managers who were asked what systems were used in their ministries to manage digital records, five made the following remarks in response to this question:

ICT 1 said: "I only know the oracle systems for the management of financial transactions and human resources management system for management of officers leave days."

ICT 2, HOD A 1 and HOD RM affirmed that: "In Botswana National Archives and Records Services, we are currently implementing a national records management system called National Archives and Records Management System, which has two modules thus the records and archives module."

ICT 3 and HOD RM 4 said: "The current systems which are used are the Land Administration Procedures Capacity and Systems (LAPCAS), Oracle System and the government accounting budgeting system commonly known as GABS."

ICT 4 and HOD RM indicated: "We use the Knowledge Repository Information System developed by SQL View Pty Ltd of Singapore, which is a Document Workflow Management System for management of records and business systems such as the inventory management, trade licensing system, oracles for finance and human resources systems."

ICT 5 and HOD RM 3 said: "The ministry has expatriates employment system, government accounting budgeting system and there is no system to manage records stored on the records management unit they are managed physically."

It was also confirmed by observations that three of the ministries surveyed were implementing electronic records management systems and all of them had business systems used for the creation and storage of data. It was found that the Knowledge Repository Information System could manage electronic records from creation to disposition and they were still in the infancy stage of managing digital records. In essence, the system was designed in such a way that its capability ranged from managing electronic records and those generated in other systems through integration. The observations also showed that the systems did not interoperate because they were not integrated.

7.3 Policy guidelines for managing digital records

As indicated by InterPARES (2012:8), a policy is a collection of rules or principles that govern decision-making and behaviour to achieve desired outcomes for a specific subject or objective in the digital realm.

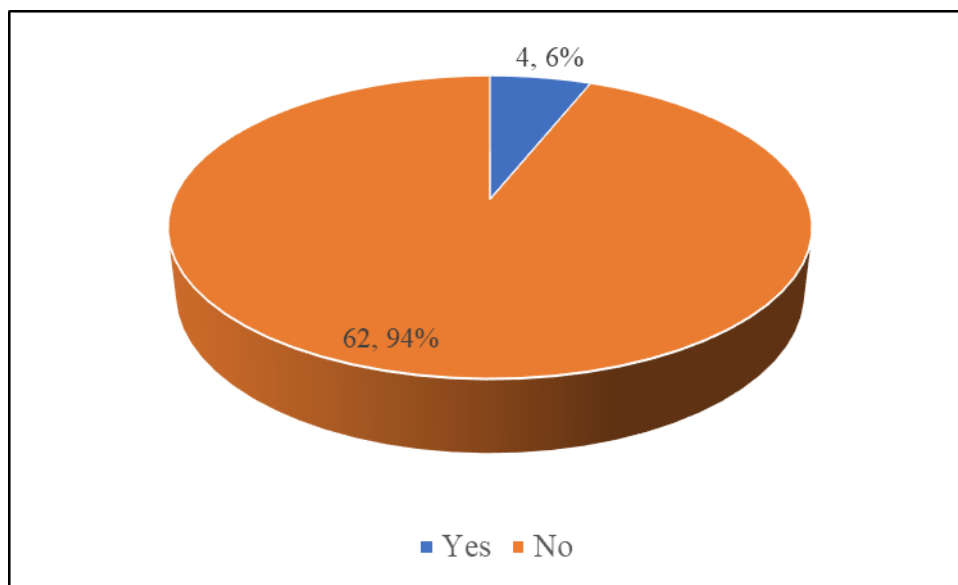


Figure 1: Preservation policy (N=66)

Figure 1 shows that a total of 4 (6%) respondents indicated that a preservation policy for the management of digital documents existed, while 62 (94%) stated that no such policy existed. According to the study results, there were no written preservation policies in place in the Botswana public service.

The two participants who were interviewed at Botswana National Archives and Records Services reported the following:

HOD A 1 said: “There was a preservation policy which is still in the draft stage so the task team is not yet nominated to review it.”

HOD RM 1 lamented: “I have never seen a preservation policy in the department.”

Participants SMs 1, SM 4, HOD RMs 3, 4, 6, 7, HOD A, MHRM and Admins 2 and 3 said that there was no preservation policy established in their ministries and preservation concerns “*were never addressed in their strategy because the idea of long-term digital preservation was unfamiliar to them.*”

During preservation policy review, it was found that it was still in draft stage. However, no comments or suggestions were made by the department. If a policy is still being developed or is in draft stage, it means there is no policy at all until it has been discussed and implemented. That is when an organisation can say that it has a policy.

HOD RM 2 said: “The ministry has developed internal procedures of managing their digital records as they adopted the system that suited their own business processes rather than relying on Botswana National Archives and Records Services.”

During personal observations, a manual for the system was availed which confirmed that there was neither a policy nor internal procedures. However, there was a system manual for daily usage. The observations revealed that the backup procedures were the only document found, which outlined the guidelines on the management of data on the ministry’s server.

ICT managers 1, 2, 3 and 4 reported: “The department of Information Technology and Ministry of Transport the Information Technology and the Information technology managers said there were several policies such as: System Acquisition, development and maintenance policy; Security Requirements of Information Systems; Cryptography Policy; Information backup policy; ICT Security Policy; Logging and Monitoring Policy; Records Retention and Disposal Policy; Segregation of duties policy and system acquisition, development and maintenance policy.

Porogo (2020) revealed that the selected ministries and departments created digital records almost every day but had no digital policy yet; they were claiming to drive e-government initiatives. The study’s results found that there was little knowledge about the use of policies, resulting in a lack of adherence, as most digital documents were still stored in systems and were never disposed of. The existing policies were not yet uploaded on the government data network website.

7.4 Technical expertise

This section presents the technical skills that the records professionals possessed as they were entrusted with management of all records in any format.

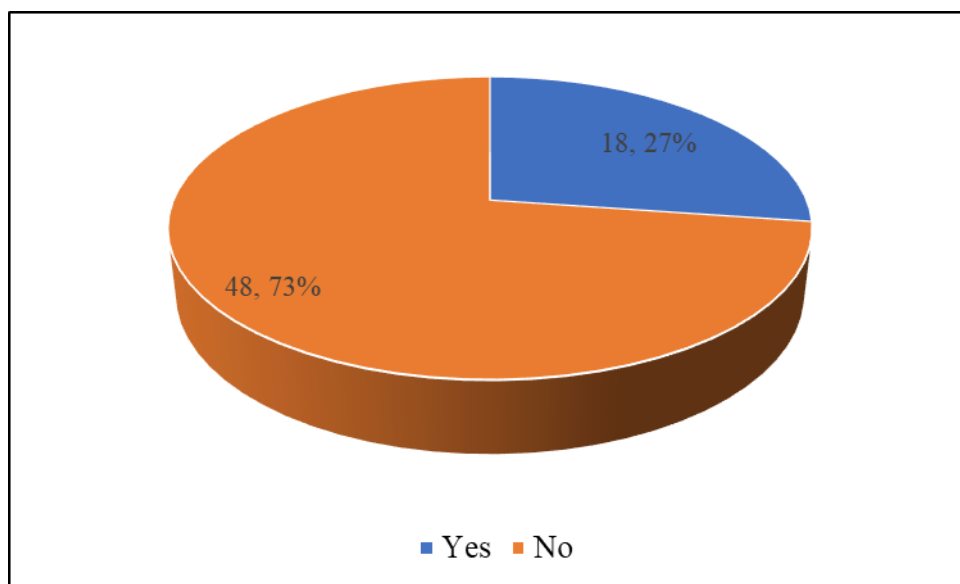


Figure 2: Technical Expertise (N=66)

According to Adu (2013), to empower digital preservation, specialists with technological (systems), metadata (categorical) and collection skills were needed. The findings in Figure 2 show that 18 (27%) respondents had technical expertise on the systems they were using, while 48 (73%) did not have technical skills they could use in planning activities for long-term digital preservation. The findings supported Katuu and Ngoepe (2017) and Mosweu and Ngoepe (2018) that records management professionals lacked skills in computing, metadata and digital preservation to manage digital records.

7.5 Collaboration and engagement

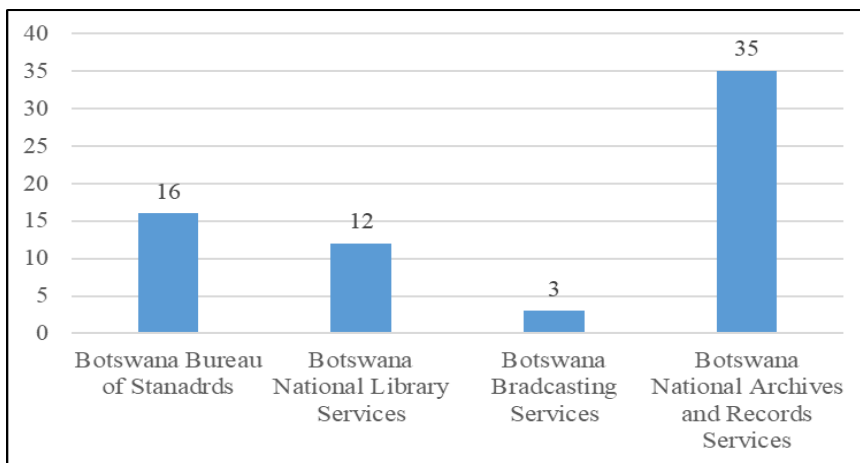


Figure 3: Collaboration and engagement (N=66)

Participants were asked how they engaged and collaborated with each other in the public service regarding digital preservation activities. Figure 3 shows that 53 percent of the participants indicated they collaborated with BNARS, 16 (24%) said Botswana Bureau of Standards, 12 (18%) said Botswana National Library Services and 3 (5%) indicated Botswana Broadcasting Services. On general documents and information matters, the BNARS collaborated with ministries and agencies but there was a lot of divergence when it came to digital preservation. It is important for ministries to collaborate on digital preservation to be seen as one government.

8. Recommendations

It is recommended that the NARS Act be revised to include digital records management. The Botswana public service should provide staff with training on digital preservation operations and digital preservation components should be included in the curricula of training institutions throughout the country. The Botswana public service should cooperate with other organisations, including private companies and parastatals to gain exposure to new ideas, techniques and tools, as well as the expertise and skills necessary to effectively maintain and manage their digital resources.

9. Conclusion

To support the study in the Botswana Public Service, few ministries had implemented electronic records management systems that can capture and store digital records in servers. The main challenge with those systems was that they did not have the capability to preserve

digital records throughout the records life cycle. The ministries did collaborate, but they still faced the challenges of digital preservation. This showed that there were initiatives, but models and methods were not shared regarding digital preservation, rather activities such as primary appraisal of semi-current records were common.

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