InterPARES Trust Project Report

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1	November 27, 2017	S. Katuu and M. Ngoepe	Compiled and summarized the major highlights of phases 1, 2 and 3.
2	March 14, 2018	S. Katuu	Adjustments to the final report were done in accordance with the input, comments and feedback obtained from the InterPARES International Seminar, 4-7 December 2017-Cape Town, South Africa.

Table of Contents

Contents

Abstract

The project contributes to the infrastructure domain as it assesses the types of enterprise systems being used to manage digital records in South Africa's public sector. It explored how these systems fit and relate with other systems in the enterprise architecture and the impact on the management of digital records. The initial products contributed to the resource cross-domain with the production of an annotated bibliography of both published and grey literature on the topic.

This study is related to the three other case studies in the Africa team undertaken in Botswana, Kenya and Zimbabwe (Katuu *et al.* 2017). The findings of the study showed that increasingly public sector institutions in South Africa are generating digital records because of increasing adoption of ICTs in government service delivery.

Further, some of these institutions have implemented ECM to manage their digital records. However, some institutions were yet to follow suit particularly so given the direction the country is taking in digitizing most of its service delivery as anecdotal evidence show.

Nevertheless, the findings indicated that emerging technologies such as cloud computing were yet to be incorporated in the area of records management given the number of respondents who gave a negative response on whether this had been implemented in their institutions and those that responded that they did not know. Consequently, the study recommended that academic institutions that offer records management such as the University of South Africa, National University of Science and Technology in Zimbabwe, University of Botswana, Moi University should incorporate these emerging areas in their curricula to prepare students who will be champions in implementing ECM and such technologies as cloud computing in managing digital records.

Background

Ngoepe and Saurombe (2016) noted that "'a day's work in technology can equate to a thousand years" when writing about the management and preservation of records created in networked environments. Technological developments are moving at an increasingly faster pace, putting the authenticity and security of records created on electronic platforms at risk due to a wide array of factors, and leading to improper electronic records management. When public records lose their authenticity and security, they can no longer provide accountability or transparency (Duranti and Franks 2015). Exacerbating this problem is the recent proliferation of cloud storage, and the transient nature of electronic records themselves. Governments ideologically invest regulations and legislation with the power to meet these challenges, but their success depends on several complex and related factors.

This study sought to investigate the management of records in networked environments in South Africa. Both Keakopa (2010) and Kemoni (2009) have argued that South Africa is the most advanced African country in the implementation of software applications to manage digital records. A survey of South African institutions that investigated their implementation of Enterprise Content Management (ECM) systems which manage digital records revealed that, by 2010 when the research was conducted, more than 40% of the institutions had five or more years of practical experience (Katuu 2012, pp.48-49). In addition they had ECM modules such as document management, records management, imaging and workflow within their applications (Katuu 2012, pp.50-51). The study also showed that South Africa had representatives of six of the major global ECM companies (Katuu 2012, p.46). Ngoepe (2015) published a study that investigated the distribution of proprietary vs open source ECM products in South Africa and showed that 58% of national government ministries use proprietary ECM products while 33% have no ECM products.

Description of the study: This study sought to investigate

a) The main challenges in managing digital records within public institutions in South Africa including the legal and regulatory context as well as the technological framework in the country's public sector institutions.
b) The technological environments within which records are being generated. This includes
    a. Determining whether ECM applications are used and if yes, the modules that have been implemented.
    b. Determining whether the ECM applications being utilized are open source or proprietary. This will include investigating the integration between ECM applications and other business systems such as Enterprise Resource Planning system.
    c. Determining whether the ECM applications have been implemented in a cloud environment or not.

Methodology

In order to address the above concerns, the study was segmented into four different phases each covering different issues as depicted in Figure 1. Some of the phases were conducted concurrently.

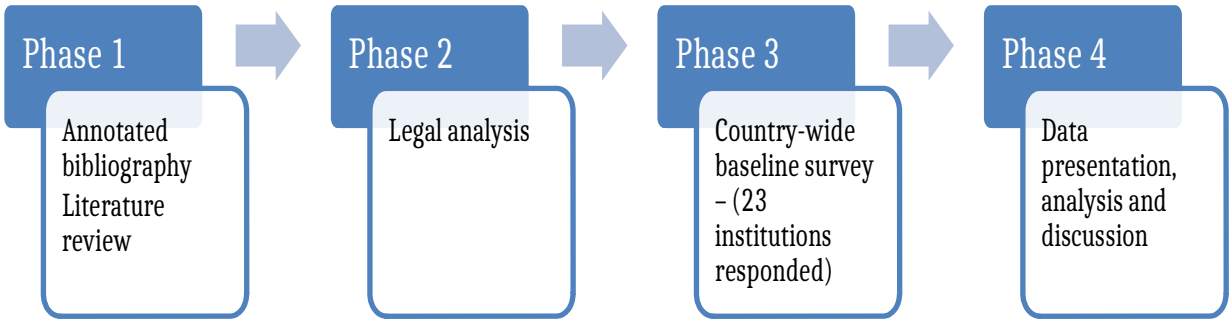

Figure 1: Research phases

Phase One - Annotated bibliography and Literature Review

Phase one generated an annotated bibliography and conducted a literature review. The annotated bibliography listed, analysed, and summarised articles and other documents that were deemed relevant to the study. A total of 52 publications were covered, and included publications authored by South Africans or/and on South Africa. The topical areas of the annotated bibliography included but were not limited to the following:

- Appraisal of digital records
- E-government adoption
- Enterprise content management
- Legal and regulatory framework assessment (Ngoepe *et al.* 2018a)

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In the same phase, an extensive literature review was done whose overall goal was to discern whether ECM applications or other enterprise-wide systems were in use in South Africa. The objectives of the literature review were to:

- establish how digital records in the South Africa's public sector institutions were being managed;
- Determine the legal and regulatory framework for records management in general and digital records in particular;

- Establish the current technological framework for digital records; and assess the technological environment that generates records (Ngoepe *et al.* 2018b)

Phase Two – Legal analysis

An analysis of the legal and regulatory framework governing the activities of institutions and practitioners in the records management was conducted. The legal and regulatory framework of records and archives in Kenya is based upon English (sometimes styled "Anglo") law often referred to as "common law." It was established that there are numerous laws and regulations that have an impact on the management of records and archives in the country. These laws are highlighted in the table 1.

Table 1: Laws and Regulations relevant to Archives and Records Management in South Africa

Type of Law	Legislation of Regulation
Constitution	• Constitution of the Republic of South Africa (Act 108 of 1996).
National Archives Act	• National Archives Act (Act 43 of 1996).
National Archives regulations	• National Archives and Records Service of South Africa (2000). "Guide to the Management of Electronic Records in Governmental Bodies." • National Archives and Records Service of South Africa (2003). "Directive D11: General Disposal Authority Number AE1 for the Destruction of Ephemeral Electronic and Related records of all Governmental Bodies." • National Archives and Records Service of South Africa (2003). "Directive D8: Prototype Schedule of Records other than Correspondence Files: Local Authorities." • National Archives and Records Service of South Africa (2006). "Circular 4 of 2006." • National Archives and Records Service of South Africa (2006). "Managing Electronic Records in Governmental Bodies: Policy, Principles and

Type of Law	Legislation of Regulation
	Requirements." • National Archives and Records Service of South Africa (2007). "Advisory Pamphlet No 1 - Managing Public Records and the Law: What governmental bodies need to know." • National Archives and Records Service of South Africa (2007). "Advisory Pamphlet No 5 - Managing email and the law: What governmental bodies need to know " • National Archives and Records Service of South Africa (2007). "Advisory Pamphlet No 3 - Records managers and the law: What governmental bodies need to know." • National Archives and Records Service of South Africa (2007). "Advisory Pamphlet No 2 - Electronic records and the law: What governmental bodies need to know." • National Archives and Records Service of South Africa (2007). "Records Management Policy." • National Archives and Records Service of South Africa (2014). "General Disposal Authorities."
Freedom of Information Act	• Promotion of Access to Information Act (Act 2 of 2000).
Privacy/Data Protection Act	• Protection of Personal Information Act (Act 4 of 2013).
Electronic Transaction Act	• Electronic Communications and Transactions Act (Act 25 of 2002).
Communications Law	• Regulation of the Interception of Communications and Provision of Communication-Related Information Act (Act No. 70 of 2002)
Information Security Act	• Protection of Information Act (Act 84 of 1982).
Information Security Standard	• Minimum Information Security Standard. (1996)
Tax Regulation	• Income Tax Act (Act No. 58 of 1962) • Tax Administration Act (Act No. 28 of 2011) • Value-Added Tax Act (Act No. 89 of 1991) • Customs and Excise Act (Act No. 91 of 1964) • Employment Tax Incentives Act (Act No. 26 of 2013) • Transfer Duty Act (Act No. 40 of 1949)

Type of Law	Legislation of Regulation
Financial Regulation	• Public Finance Management Act (Act No. 1 of 1999) • Municipal Finance Management Act (Act No. 56 of 2003) • Financial Intelligence Centre Act (Act No. 38 of 2001) • Financial Advisory and Intermediary Services Act (Act No. 37 of 2002) • National Credit Act (Act No. 34 of 2005)
Commercial Law	• Companies Act (Act No. 71 of 2008) • Close Corporations Act (Act No. 69 of 1984) • Consumer Protection Act (Act No. 68 of 2008)
Labor Law	• Basic Conditions of Employment Act (Act No. 75 of 1997) • Basic Conditions of Employment Amendment Act (Act No. 20 of 1993) • Labour Relations Act (Act No. 66 of 1995) • Employment Equity Act (Act. No 55 of 1998) • Unemployment Insurance Act (Act No. 63 of 2002)
Property	• Restitution of Land Rights Act (Act No. 22 of 1994)
Administrative Law	• Statistics Act, 2006 • Public Officer Ethics Act, 2003
Health and Safety	• National Health Act (Act No. 61 of 2003) • Compensation for Occupational Injuries and Disease Act (Act No. 38 of 2001) • Occupational Health and Safety Act (Act No. 38 of 2001) • Prescription Act (Act No. 68 of 1969)
Auditors	• Auditing Profession Act (Act No. 26 of 2005)
Insolvency Law	• Insolvency Act (Act No. 24 of 1936) • Protected Disclosures Act (Act No. 26 of 2000) • Legal Deposit Bill of 1997

Of the laws, regulations, and policies discussed below, the Constitution has highest precedence; where any other law conflicts with the Constitution, that portion of that law will be overturned if brought before the court. Where acts conflict with one another, a prudent approach is to adhere to the act with the higher standard until such time as the conflict is brought before the courts to be

resolve. For instance, if one act prescribes a minimum 5 year retention period, whereas another seems to prescribe 7 years for the same type of record, the safest course is to retain those records for 7 years (Hofman 2018).

Phase Three

The third phase gathered information on the technological environments within which records are being generated. The research questions covered the background information of the respondents as well as issues surrounding cloud services, Enterprise Resource Planning (ERP) applications, Enterprise Content Management (ECM) and the integration of ERP and ECM. To glean this information, ten questions were asked.

1. Which sector best describes your institution?
2. How would you characterise the scope of your institution's mandate?
3. Which section or department in your institution do you belong?
4. Does your institution use cloud computing to manage its information assets?
5. Which cloud computing models are used in your institution?
6. Which cloud computing deployment models are used in your institution?
7. Which functional areas are covered by the transactional system in your institution?
8. Which company supplies the transactional system such as the ERP in your institution?
9. Which companies supply the ECM in your institution?
10. Has there been any significant integration between your ECM and ERP systems?

In this phase of the study, a quantitative approach was adopted where questionnaires were administered to respondents in selected public sector institutions. Descriptive survey research was thus adopted. The selection of the institutions was purposively done to ensure participation of key domains in South

Africa's public sector ensuring the two tiers of government are represented. However, individual respondents were randomly selected.

Findings

The response rate for the study was **twenty-two** (22) respondents of records practitioners with most of them from the public sector parastatals, independent offices, and commissions as shown in Table 1.

Table 2: Respondents per sector

Respondents' sector	**Number of people (%)**
Public Sector – Executive Branch: Social	10 (45.45%)
Public Sector – State-owned enterprises/ independent offices/ commissions/ institutions based on Chapter 9 of the of the Constitution	6 (27.27%)
Private sector	4 (13.64%)
Public Sector – Executive Branch: Economics	1 (4.55%)
Public Sector – Executive Branch: Environment	1 (4.55%)
Public Sector – Legislature Branch	1 (4.55%)

All the 22 respondents (100%) indicated that the institutions they represented were mandated to conduct activities across the nation.

The respondents were from different departments and sections as shown in Table 3 and majority of them (68.18 %) were records/archives professionals in the institutions they represented.

Table 3: Respondents by department/section

Respondents' sector	**Number of people (%)**
Records/Archives Professional	15(20.83%)
Information Technology	3 (13.64%)
Other (knowledge management, project management)	2 (9.09%)
Executive/senior management	1 (4.55%)
Research	1 (4.55%)

Increasingly many institutions around the world are employing cloud computing which is internet-based computing that provides shared computer processing resources and data to computers and other devices on demand. The study was interested in finding out whether this global trend is gaining ground in South Africa institutions and the most important reasons why institutions would employ cloud computing.

Table 4 is a summary of the responses and shows that more than half of the institutions in Kenya represented by 9 (40.9%) of the respondents are not currently using cloud computing to manage their information assets. For those who use cloud computing, 9.09% (2 respondents) indicated they use it to improve security while 9.09% (2 respondents) said they use cloud computing to increase storage capacity. Another 4.55% (1 respondent) said they use it to improve business process transformation, 4.55% (1 respondent) to increase organizational performance, 4.55% (1 respondent) to keep pace with the industry and 4.55% (1 respondent) to reduce cost. 5 respondents (22.73%) indicated they did not know whether their institution was using cloud computing or not.

Table 4: Respondents on cloud computing

Respondents' sector	**Number of people (%)**
No	9 (40.9%)
I do not know	5 (22.73%)
Yes – to improve security	2 (9.09%)
Yes – to increase storage capacity	2 (9.09%)
Yes – to drive business process transformation	1 (4.55%)
Yes – to increase organizational performance	1 (4.55%)
Yes - to keep pace with the industry	1 (4.55%)
Yes – to reduce cost	1 (4.55%)

Cloud computing can be offered as private, public or hybrid models. As shown in Table 5, for those institutions who use cloud computing services, 3 respondents (14.29%) indicated they use community cloud and 3 respondents (14.29%) use private cloud. 8 respondents (38.10%) indicated they did not know whether their

institution used cloud computing while 7 respondents (33.33%) indicated their institution did not use cloud computing.

Table 5: Cloud computing service models

Service model	Number of responses
I do not know	8 (38.10%)
No	7 (33.33%)
Community cloud	3 (14.29%)
Private cloud	3 (14.29%)

Table 6 demonstrates that in institutions where cloud computing services are used, the most common deployment models indicated were Software as a Service (SaaS) used by 22.73% of the respondents while only 9.09% use either Infrastructure as a Service (IaaS) or Platform as a Service (PaaS) respectively. Further, 4.55% of the respondents indicated they use a combination of all the three deployment models.

Table 6: Deployment model

Deployment model	Number of responses
I do not know	8 (38.10%)
No	6 (28.57%)
Infrastructure as a Service (IaaS)	4 (19.05%)
Platform as a Service (PaaS)	2 (9.52%)
A combination of three deployment models (IaaS, SaaS, and PaaS)	1 (4.76%)

ERP software have been implemented by many organizations to integrate applications used to manage their business processes. The study sought to establish the functional areas covered by ERP systems. Most respondents indicated that their institutions had implemented ERP systems although the functional areas covered by each ERP varied as shown in Table 7.

Table 7: ERP functional areas

Functional areas	Number of responses

Functional areas	Number of responses
Supply chain management	10 (45.54%)
Accounting	9 (40.91%)
Operations	9 (40.91%)
Inventory or stock management	7 (31.82%)
Project management	6 (27.27%)
Customer relationship management	5 (22.73%)
Data services	4 (18.18%)
Order Processing	4 (18.18%)
I do not know	3 (13.64%)
None	3 (13.64%)
Corporate services	2 (9.09%)
Manufacturing	1 (4.55%)
Marketing and sales	1 (4.55%)

Respondents were further required to state which company supplied the transactional system such as the ERP in their institutions. The table below shows responses.

Table 8: ERP supplier

ERP supplier	Number of responses
I do not know	7 (35.00%)
Oracle E-Business Suite	3 (15.00%)
Oracle PeopleSoft	3 (15.00%)
SAP Business	3 (15.00%)
None	2 (10.00%)
Microsoft Dynamics	2 (10.00%)
Other (Open Text and Government supplied system)	2 (10.00%)
IBM – Maximo	1 (5.00%)
Oracle Fusion	1 (5.00%)

In relation to this question, this study also sought to establish the companies that supply the Enterprise Content Management (ECM) system in those institutions that had indicated use of ECMs. Table 9 shows the responses

Table 9: ECM supplier

ECM supplier	Number of responses
None	6 (27.27%)
Microsoft (SharePoint/Office 365)	6 (27.27%)

ECM supplier	Number of responses
OpenText (Hummingbird/eDocs, Livelink/Content Server/Suite 16)	5 (22.73%)
I do not know	3 (13.64%)
Dell EMC (Documentum)	2 (9.09%)
HP (TRIM/Records Manager)	2 (9.09%)
Hylland OnBase Suite	2 (9.09%)
Alfresco	1 (4.55%)
Fabasoft Folio ECM	1 (4.55%)
IBM (Content Foundation/Manager aka Filenet)	1 (4.55%)

ECM systems often have different modules performing different activities. As well, there are some instances where institutions have integrated their transactional systems such as ERP systems with their ECM systems. The study sought to establish whether the institutions had different modules that had been implemented and whether the institutions had any significant integration of the ECM and transactional systems and systems.

In response to this, there was a significant amount of integration as demonstrated in Table 10

Table 10: ECM integration

ECM integration module	No integration	Minimal integration	Full integration
Document management	4 (33.33%)	6 (50.00%)	2 (16.67%)
Records management	5 (45.45%)	5 (45.45%)	1 (9.09%)
Scanning	5 (45.45%)	6 (54.55%)	0 (0.00%)
Workflow	4 (36.36%)	6 (54.55%)	1 (9.09%)
None			
Collaboration	6 (60.00%)	4 (40.00%)	0 (0.00%)
Digital Asset Management	4. (44.44%)	5 (55.56%)	0 (0.00%)
Web Content Management	2 (25.00%)	6 (75.00%)	0 (0.00%)
I do not know			

Concluding remarks

This study revealed inadequacy of research work that specifically addresses the issues of ECMs & ERPs both South Africa's public and private sector. The bulk of the extent literature addresses the generality of electronic records management issues. The findings of this study particularly showed that increasingly, South African institutions are generating digital content because of the transformation taking place in government service delivery.

From the findings respondents either are not aware about the use of cloud computing, the service models or the deployment models or when they are, say that between 28-40% of their institutions do not deploy cloud computing, service or deployment models. On the utilization of ERPs in institutions, there are a significant number of modules in use, the most common being human resources, supply chain management, accounting, and operations. Unfortunately, most respondents did not know who supplied the institutional ERP system. Those that did know, it seems Oracle is the overwhelming favorite. On the utilization of ECMs in institutions, more than 40% of the institutions either did now know or did not have such applications. Amongst the respondents that knew about ECMs in their institutions Microsoft and Open Text applications were in almost two thirds of the institutions. Finally, in terms of integrating ECMs with ERPs, the most common modules were document management, records management, scanning and workflow even though the degree of integration was often minimal.

This study therefore recommends that education and training institutions that prepare archives and records professionals incorporate these emerging areas in their curricula to prepare graduates for a technologically sophisticated work environment.

Products

1. Annotated Bibliography
2. Literature Review

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