Chapter 30
Cloud Computing as a Strategy for Preservation of Digital Resources in Academic Libraries in South Africa

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EXECUTIVE SUMMARY

Academic libraries around the world have been struggling with how to preserve their intellectual output. Of all the preservation challenges facing academic libraries, none is more pressing than developing strategies for digital preservation. The chapter thus aimed at investigating the adoption of cloud computing as a strategy to preserve digital resources in academic libraries. Data collection was largely based on a critical review of literature relating to the adoption of cloud computing in academic libraries. The findings revealed that although cloud computing has been seen as one of suitable preservation strategies by many institutions, the level of its adoption is low in academic libraries in South Africa, especially in the area of preservation of digital resources. Several recommendations were also made, and among others were the enactment of preservation policies and improving technology infrastructure. The study further proposed a roadmap that will serve as a guide in the adoption of cloud computing in academic libraries.

BACKGROUND

The evolving digital technologies have led to the creation of digital resources by the academic and research institutions, the world over. However, these institutions are facing numerous challenges as they attempt to preserve and sustain their digital resources including dealing with rapid technology obsolescence used and making accessible mass quantities of digital data. Sigauke (2012) noted that some digitized materials have been lost and to date remain inaccessible due to the original software being outdated or incompatible with modern operating systems, and that poses a threat to digital content created by both academic and research institutions. One of the important issues is how and where to store the digital resources

that are being preserved while there are many different technical aspects of digital preservation. The technical challenge faced by academic libraries is therefore to ensure that digital information generated today can survive long-term changes in storage media, devices and data formats. Digital preservation is thus a significant problem facing academic libraries and that call for distributed and scalable approaches for managing vast digital collections.

As noted by May (2010) digital preservation involves planning, resource allocation and application of preservation methods and technologies, and it combines policies, strategies and actions to ensure access to reformatted and born digital content regardless of the challenges of media failure and technological change. Academic institutions are constantly in search for low-cost, best solutions and strategies that may enable preservation of their digital resources. Preservation strategy is a well-considered and documented approach to preservation for collecting archives, and its purpose is to ensure that access to the born digital archives accessioned by a repository can be maintained indefinitely. In this chapter, cloud computing is seen as one of suitable preservation strategies and the prospect of using this technology to preserve digital materials has become an option in most academic institutions, the world over. Cloud computing, more specifically, cloud-based data storage offers some potential to help address the issues of data storage for digital preservation including offering redundant and geographically diverse data storage (Corrado & Moulaison, 2015). Cloud computing is the delivery of computing resources via the internet as a service and its pay-per usage model, flexibility and scalability features has the potential to transform economic activities. It promises better delivery of Information Technology (IT) services as well as availability wherever needed at reduced costs with users paying only as much as they consume through the services of cloud service providers. The National Institute of Standards and Technology(NIST) (2011) defines cloud computing as a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management effort or service provider inter-action). Kabata (2012) also defines cloud computing as a form of distributed storage involving shared hardware or several virtual machines running on a physical machine. In cloud computing, data and the entire technical infrastructure of an organization are moved from corporate data-centers to cloud service providers (NIST, 2011).

Cloud computing can thus be used as an environment for scholarly communication, collaboration, discovery, publication, and dissemination of scholarly works (Singh & Veralakshmi, 2012). For the libraries cloud-based services are another way library patrons interact with the information which makes it inevitable for the librarians to make themselves acquainted the way information is stored, managed and delivered in the cloud (Bushhousen, 2011). Goldner (2010) mentioned that the main focus of libraries moving into the cloud has been discovery services, that is the need to disclose libraries' vast collections on the Web. The libraries can therefore apply cloud computing to data integrity, upgrade and maintenance, intellectual property management, backups, disaster management and failover functions.

PROBLEM STATEMENT

As noted by Wright (2012) any long-term access to digital resources may be heavily dependent on digital preservation strategies being in place and underpinned by relevant policy and procedures. Academic libraries are therefore running a risk of losing vital intellectual output of significance importance if preservation strategies are not well developed and implemented. As observed by Beagrie (2008) the

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