Chapter 5
Applying Kolb Learning Experiential Theory with Cloud Computing in Higher Education Institutions: Tanzania

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ABSTRACT

The maturity of free and open source movement has brought a number of ICT tools. It has affected the way courses are delivered, the way contents are developed, the way data are interoperable, the way learning and teaching materials are shared, the way learners access classes and the way library resources are shared. In developing countries, several libraries are migrating into digital libraries using low cost technologies readily available due to open access, free and open source technology and e-publishing tools. Recent development of cloud computing technology provides state of art tools for libraries. It provides a common platform for easy information storage and sharing. Thus, there is lowering of the cost required to procure and manage library ICT infrastructure due to the capability of that cloud computing which allows the storage to be on a single, efficient system that saves cost and time. In developing countries where most libraries suffer from limited budgets for ICT services, it is anticipated that the future of digital libraries is on cloud libraries.

1. INTRODUCTION

The advent of Information and Communication Technology (ICT) has changed the landscape of libraries in the world. The libraries in developed and developing countries no longer depend only from print materials for its customers (Wiederhold, 1995). Thus, with the advancement of ICT even the conventional definition of library need to be revisited so that it includes aspects of electronic resources:
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A place in which literary and artistic materials, such as books, periodicals, newspapers, pamphlets, prints, records, and tapes, are kept for reading, reference, or lending. (Hartman, 2007; Plutchak, 2012)

Libraries are incorporating traditional methods of keeping, referencing and lending literary materials with new methods using ICT. This is what is referred as “digital library” (Lyons, 2007). Examples of ICT applications which use digital libraries include: television and radio; Compact Discs (CDs) and Digital Versatile Discs (DVDs); video conferencing; mobile technologies; web-based library management technologies; and electronic learning platforms. Challenges facing libraries in developing countries to adopt digital library are inherent contributed by challenges affecting Higher Education Institutions (HEIs) in adopting new ICTs tools as mentioned by Sife et al. (2007) in paper titled “New technologies for teaching and learning: Challenges for higher education institutions in developing countries”. The challenges are namely: lack of systemic approach for ICT implementation, awareness and attitude towards ICTs, administrative support, technical support, staff development, lack of ownership and inadequate funds (Sife, Lwoga, & Sanga., 2007). Other challenges include: cost of acquiring, managing, and maintaining ICT infrastructure, high cost of bandwidth, inadequate competent technical staff and lack of cloud and digital library policies (Fox, 2009). Nonetheless, the advancement of ICT in cloud computing and Free and Open Source Software (FOSS) provide an opportunity for libraries in developing countries to address some of these challenges by effectively utilizing the potential of cloud services.

By definition, cloud computing from the National Institute of Standards and Technology (NIST) is defined as follows:

Cloud computing is a model for enabling 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 interaction. (Mell & Grance, 2011).

The cloud computing is characterized by communication, information sharing, collaboration, interoperability and user-centered design. Inherently these characteristics of cloud computing are well embedded in FOSS (Yuan et al., 2008). FOSS has brought new movement in education. These include open access, open educational resources, open courseware etc. The advocacy of open education argues that knowledge can be shared using different ICT tools. This knowledge sharing can be in different forms, for example, (i) sharing in scholarly research (open access) (ii) sharing in teaching and learning materials (open educational resources) (iii) sharing in computer code (open source) (iv) sharing in research data in a machine readable format (open data) (v) sharing in how you work/learn (open practice) (vi) sharing in courses to classes (either open courses or massive open online course) (Yuan, MacNeill, & Kraan 2008). These characteristics provide basis for implementing cloud library (Xinping, 2010). Mavodza (2013) argues that cloud library is going to shift the problems of HEI from hardware and software demands for storing and organizing data, to information access concerns. The reason behind this is because there is exponential growth of information sources and it is associated with its complexities that limit capacity of libraries in developing countries to host their own electronic information resources in its entirety. Thus, this necessitates opting for alternatives solutions using cloud computing (Mavodza, 2013). Libraries in developing countries are migrating from conventional library to digital library and cloud library which is for virtual library (Lwoga, 2012). This migration to virtual library is supported by tools from cloud computing (CC, 2014). Cloud computing refers as a model of network computing where