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UTILIZATION OF CLOUD COMPUTING IN EDUCATION

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INTRODUCTION

The use of emerging technology in universities to support teaching and learning has clearly changed the way education is being conducted in many Nations. Educational institutions are able to collaborate, network, share resources, and increase enrolment because of technology. It is common to see many online certificate and degree programmes being offered in many universities around the world. Educational institutions throughout the World have become highly dependent on technology for teaching, learning and for conducting research. They continue to seek opportunities to rationalize the way they manage their resources. These opportunities have become even better with the introduction of Cloud Computing.

The potential and efficiency of using Cloud computing in higher education has been recognized by many universities in the developed countries [1]. The Cloud computing approach relies on a number of existing technologies, e.g., the Internet, virtualization, grid computing, and web services. It is simply the use of computing resources on the Internet instead of on computers. According to Reese (2009), Cloud computing, like the web, is the evolution of a variety of technologies that have come together over the last decade or more to alter an organization's approach to building its information technology (IT) infrastructure and hosting its information systems [2]. Cloud computing involves computing over a network, where a program or application may run on many connected computers at the same time. It specifically refers to a computing hardware machine or group of computing hardware machines commonly referred to as a server connected through a communication network such as the Internet, intranet, a local area network (LAN) or wide area network (WAN). Any individual user who has permission to access the server can use the server's processing power to run an application, store data, or perform any other computing task. Therefore, instead of using a personal computer every-time to run the application, the individual can run the application from anywhere in the world as the server provides the processing power to the application. The server is also connected to a network via the Internet or other connection platforms to be accessed from anywhere [3].

This article therefore briefly reviewed the extent to which cloud computing applications and services can be used tin education. It also highlights the level of adoption and classroom utilization, and some aspects of the distinctiveness of cloud computing. Some common Cloud computing uses in education are presented below:

• Microsoft Office 365 is one of the versions of Office 2013 that utilizes a form of cloud computing for storage (e.g. Microsoft SkyDrive in the case of Office). Microsoft also offers a set of Web apps that are close versions of Word, Excel, PowerPoint, and OneNote which can be used via the Internet without installing any software.

• Google Drive is a pure cloud computing service, with all the apps and storage found online. This drive is also available on more than just desktop computers; it can be used on tablets like the iPad and smartphones. Other Google's services such as Gmail, Google Calendar, Google Reader, Google Voice could be considered cloud computing tools.

• Apple iCloud's service is primarily used for online storage and synchronization of mail, contacts, and calendar. All the data needed is available on iOS, Mac OS, or Windows device. Also Amazon Cloud drive's storage is commonly used mainly for music e.g. MP3s. Hybrid services like Dropbox and SugarSync work in the cloud because they store a synched version of files online, but most also sync those files with local storage.

• Various educational institutions have started utilizing Cloud computing in a variety of ways. For instance, in traditional computing, Ajith and Hemalatha (2012) installed software programs on computer and updated the hardware as per their requirements. Documents were created and stored in the computer. The documents are accessible on their own network, but they could be accessed by computers outside the network. Within the Cloud computing environment, the software programs are not run from one's personal computer, but are rather stored on servers accessed via the Internet. According to Ajith & Hemalatha (2012), Cloud computing provides resources and capabilities of Information Technology (e.g., applications, storages, communication, collaboration, infrastructure) via services offered by Cloud Service Provider (CSP). They also indicated that Cloud computing has various characteristics as shared infrastructure, self-service, pay-per use model, dynamic, virtualized, elastic and scalable. They utilized Cloud computing because they believed that Cloud computing in academic environment will be benefitted by every student and staff where lots of collaboration and safety of data is needed [4].

An educational institution has various departments and many semesters where lots of students need to access the computing tools with highly available up-to-date software and hardware.

Cloud computing has the capacity of scaling and elasticity which is perfect for such an environment. Ajith and Hemalatha

outlined recommendations for cloud business continuity for the sector from generic perspective. They opined that as the range of cloud services is expanding rapidly, particularly those that are offered as Software as a Service to the end user, (which are built on Platforms as a Service), adding to the fluid boundary between Infrastructure as a Service and traditional hosting solutions, the list of potential cloud products will become enormous which will be of great benefit to the educational institutions [4].

Procuring and maintaining a wide range of hardware and software require substantial, ongoing investment and the skills to support them. According to Saidhbi, in the current financial crisis and the challenges of growing needs, universities are facing some problems in providing necessary information technology (IT) support for educational, research and development activities. Saidhbi conducted a study to find alternatives to the use of IT while leading universities try to improve agility and obtain savings. Saidhbi discusses the advantages of cloud computing for educational institutions and the limitations of current IT utilization in Higher Education institutions. He also discusses alternative solutions to solving IT utilizations limitations in Higher Education Institutions [5].

Cloud computing is the better ICT utilization mechanism for educational institutions teaching, learning and a service delivery requirement, for it enables wise and strategic use of technology that significantly reduces the cost.

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