



CLoud COMPUTING AND GREEN TECHNOLOGY SUSTAINABILITY: COMPARATIVE ANALYSIS OF 3-TIER EDUCATION SYSTEMS IN NIGERIA

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Abstract

As a form of the emergent penetration of information technology (IT) in the dynamic economy, green computing and sustainability has in recent years obtained great interest across the world in light of outsourcing IT infrastructures and services. The initial form of green sustainability is the introduction of traditional data centers but currently it transforms into the 'cloud'. Therefore, the role of sustainability and green transformation lies on computing investment into various spheres of life. This paper however seeks to explore the analysis of cloud computing and green sustainability movement in various categories of education such as higher, tertiary and primary level of education.

Key Words: Cloud Computing, Green Technology, Education Systems in Nigeria.

INTRODUCTION

Application of cloud services in education

In Education sector, academicians are uniquely identified with their information seeking skills which enable them update their knowledge regularly. Cloud computing invariably provides this information to Educators through the internet and aids in academic excellence by deploying cloud services through various mediums. These could be in the form of Creating Records and files, storing these created files and sharing the information and or created files amongst educators or learners. Hence the application of Cloud computing is widely spread across all levels of learning. Ernst and Young (2011) has it that teaching materials can be made available by the Cloud Service Providers to educate the client users on the available risk management issues as it relates to cloud usage. This indicates how crucial it is for educators who are cloud service users to understand how to manage their information usage in the cloud.

There is as well some web-based software hosted in the cloud and deployed as cloud service rendering to Educators which were generally analyzed by Aaron and Rochie (2012) for academic improvement. With the flexibility nature of cloud computing, academic professionals and or learners can always prepare their proposals, write-ups, conference papers etc, store them on the cloud, and easily retrieve them as and when needed. In a more advanced area, the importance of implementing cloud computing in Libraries is heightened



(Cloud Library) as a link which connects the Libraries with the IT sector thereby enabling readers share educational resources amongst different libraries (online) as such increasing the effectiveness of the use of Libraries, while cost of materials is reduced. Abidi (2012).

Application of cloud services in health sector

With the existence of some cloud based health applications, health solving information are being provided to enable the client user partakes in the services provided. Amongst these applications includes the Health Vault, Google Health and this provision grants instant access of data to both Health Patients and administrators for critical problem solution.

The pressing need of every health sector includes; improvement on the quality of care services rendered, ensuring patient' data security, and reducing cost. By the application of Cloud services, these needs obviously would be met. The cloud based platform, provides opportunity for patients to be able to control their ailment for healthy living through the consumer oriented cloud based applications. Models like the (PCMH) Patient Centred Medical Home grants access to an individual patient from various providers.

The need to cut cost in health sector is one of the bases for taking on cloud computing. The decision makers of the health sector, while stipulating their IT investment decisions puts this into consideration and the returns to their investment. Although data security is the most discouraging factor in cloud computing, yet a personalised, centralised and standardized way of managing clients data within the health ecosystem can be assured in the cloud and by the use of SaaS as well as in the form of private cloud deployment. Schweitzer (2012) in his survey has shown that cloud design is useful and mightier to the former (EHR) Electronic health record system of operationalism in the health sector because of the economical, utility and efficacy features of cloud services. With proper examinations of some developing economies, it is obvious some health-based data sharing applications have been implemented to as well help in technology analysis Nir (2010).

CHALLENGES OF CLOUD COMPUTING IN NIGERIA

The elasticity and scalability nature of cloud computing to a large extent attracts numerous users to itself because the users tend to pay just for what resources they use as such it becomes relatively less expensive for usage compared to client users constructing their individual infrastructures. Companies significantly store and host their entire needed infrastructure in the cloud thereby saving manpower and finances for such organisations. This shows the great benefit of using cloud computing as Madhan,(2012) explained that upcoming enterprise applications would be dependent on cloud computing, none the less, prevailing challenges of cloud computing are evidently shown below. This relates to various areas of implementation and usage of cloud computing in Nigeria.

Data security. The assurance of data security is seen as the greatest deterrent to the adoption of cloud computing in all spheres. However, security measures such as (IDS) Intrusion detection system, encryption are put in place to checkmate activities performed on data stored in the cloud. To ensure security, confidentiality, integrity, and availability are terms which must be well explained and adhered to in every establishment over their data. When an establishment encrypts its data, it is expected to be in charge of the encryption keys which are unique to every encrypted document, this is likened to confidentiality, and the encrypted key should be confidential to the establishment. The integrity of an enterprise is portrayed when it maintains the stipulated policy including its security laid down rules such as uniqueness of password. There is every need for availability of data at any time and easy access from anywhere over the internet to be ensured in every company. In this view, (Gartner in Train, 2009) listed various issues to be understood by establishments before they venture into cloud computing, these includes; location of data, segregation of data, regulatory compliance, recovery of data, supportive investigation, durable viability, and privilege user access, the listed when put into consideration would yield effective data security. MCP is one of the cloud based services seen to provide various level of data security which enhances the managerial capability in developing nation.

CONCLUSION

Epileptic power supply. This is one of the factors that badly affect business sectors as seen in developing countries like Nigeria (Nebo, 2013) in reference to Figure 1. This could be a great challenge to the adoption of cloud service as it denies the client-user Instant access to stored data and inconsistency in internet access. On the other hand enterprises could face excessive reliance on the use of generators which is not cost effective to business as more expenses would be incurred.

Internet bandwidth. Bandwidth is a concept used to explain the amount of data transferred over a medium; internet or network, therefore bandwidth describes network speeds. For instance, 1 Gigabit connection of Ethernet possesses a bandwidth of 1,000 Mbps which is 125 megabytes per second. Internet bandwidth is said to mean an electronic process that connects a user's PC to the internet. When the bandwidth connection is more, the speed of the internet will be faster; hence the information loads easily, and in a short time. In recent times, bandwidth limitations is a major challenge to internet surfing. Meanwhile, according to (Lori, 2011) 10mbps is the benchmark for cloud and video related activities. However, as recorded in the 'State of the Internet 3rd Quarter 2012 Reports' (Leadership, 2013) Nigeria has been shown as the lowest average internet connection speed as declined to 2.8 mbps. This inhibits the bandwidth-efficiency, thereby taking a longer time to connect to the cloud on the internet.

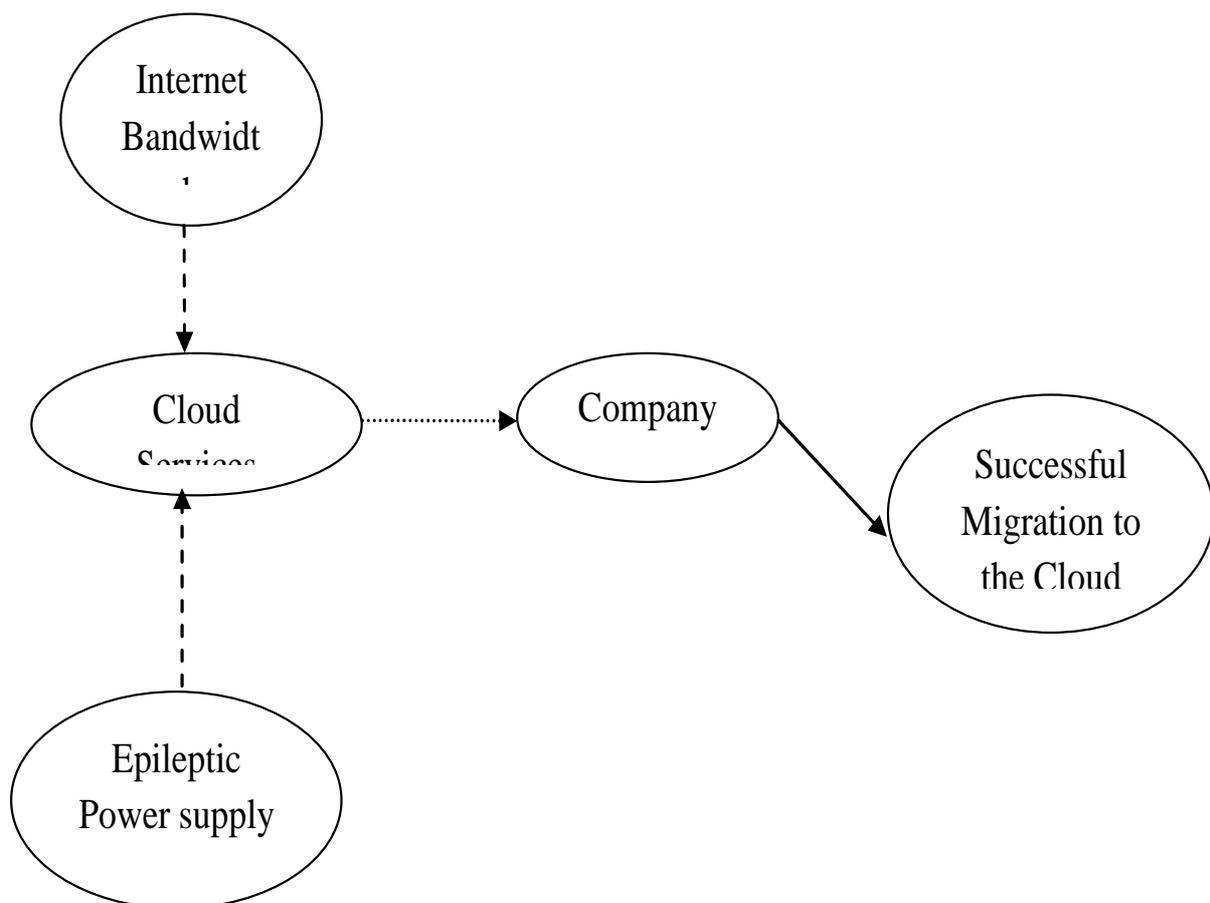


Fig. 1 : Conceptual model - Schematic Representation



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