



ASSESSMENT OF LECTURERS' ATTITUDE TOWARD ACCEPTANCE AND USE OF CLOUD COMPUTING TECHNOLOGIES IN TEACHING AMONG NIGERIAN UNIVERSITIES DURING COVID-19 PANDEMIC.

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Abstract

This paper assessed the attitude of lecturers toward

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the acceptance and the use of cloud computing technologies for teaching among Nigerian universities during COVID-19 pandemic. The study employed a descriptive cross-

sectional survey research design. Three hundred lecturers were selected from Southwestern Nigerian universities using proportionate stratified sampling technique. Data for the study was collected using Questionnaire on Acceptance and Application of Cloud Computing Technologies for Teaching(QAACCTT). The data were analyzed using frequency and Two-way Analysis of

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Variance(ANOVA). The results of the first hypothesis showed that attitude had significant effect on lecturers' acceptance of cloud computing technologies for teaching ($F(1,186) = 1136.28; p < 0.05$). The result of the second hypothesis showed that attitude had no significant effect on the lecturers' use of cloud computing technologies for teaching ($F(1,632) = 1,476.03; p > 0.05$). The study concluded that lecturers' attitude toward the acceptance of the technologies was good, but their attitude toward the use of these technologies did not show that majority of them were enthusiastic enough.

Introduction

The COVID-19 pandemic lockdown was an eye opener for the use of cloud computing technologies in conducting interactions, various businesses and other activities online instead of the physical interactions that we used to have around the globe. Such businesses and interactions did not exclude educational institutions from primary to tertiary institutions all over the world. In Udem, Ejike & Uche (2021) according to Kandola (2020) the unique Coronavirus (COVID-19) Pandemic had proven to be a cankerworm that paralyzed the global economy, education, health and other sectors in general. Nigeria confirmed and documented its first COVID-19 case (Nigerian Centre for Disease Control, 2020) on February 27, 2020. The psychological trauma caused by the fear of contacting this dreaded contagious disease as well as the hunger associated with partial or total lockdown, limited freedom of movement and association are all painful experiences that cannot be forgotten. This COVID-19 had a major impact on Nigerian operations especially in educational sector from primary level to tertiary institutions. The Nigerian government initial approach to curtail the spread of the pandemic was to close all schools, including universities, starting from March 2020. As a result, all students from undergraduates to postgraduates were forced to leave their educational institutions halting academic activities and interrupting academic calendars at a variety of institutions (Ifijeh & Yusuf 2020). In view of the above, most governments throughout the world had to temporarily shut down educational institutions in an effort to prevent the spread of the disease. Over 91% of the world's students' population was affected by this country wide closure (UNESCO 2020). This pandemic had affected students' lives in many ways based not only on their level and field of study, but also, on where they were in their programmes. Brajkovic & Zavalina (2020) in their views universities and other higher institutions in addition to schooling had some halted campus-based functions such as teaching, IT and research. They claimed that constraints on research activities may have a direct impact on the COVID-19 response, since universities are major participants in creating solution to such pandemic, through their research and technical training. In addition, the spread of this fatal pandemic had compelled various activities in Nigerian higher institutions to be adjusted, resulting in the development of alternative teaching and learning approaches instead of the traditional physical teaching and learning methods. When they discover continuity offer in cloud computing technologies lecturers and students also had to make efforts to adjust to what were for many a new formula for teaching and learning in the view of UNESCO (2020).

Moreover, the economic implication of the pandemic was that, not only had campuses shifted to remote learning almost overnight, but institutions are also grappling with grave financial challenges as the domestic and global economies then face a major recession. Teachers' pedagogical belief according to Kagan (1992) act as a filter through which new knowledge and experiences are screened for meaning and relevance. This also applied to teachers' experiences

with technologies. Researchers' have proposed that, in conjunction with the use of technology over time, teachers often change their classroom practices and ultimately, adopt more student-centred beliefs (e.g. Matzen & Edmunds 2007). However, this is not true of all teachers. This may be because teachers' individual experiences, beliefs, emotions, knowledge, self-efficacy, skills and motivations can be influenced by their teaching context (Stoll 1999). Moreover, teachers' perceptions about an action toward changing and developing their methods including their uses of technology, are influenced by what they believe represents good teaching and learning (Ertmer, & Glazewski, (2015); Fullan, ((2001) & Putnam & Borko 1995). Evidence suggests that teachers who hold constructivist beliefs tend to be highly active technology users (Ertmer, & Glazewski, (2015); Judson, (2006). In their view not only do these teachers tend to use technology more frequently than teachers with teacher-centred beliefs but they also tend to use them in more student-centred ways (i.e., allowing students to select and direct their own uses of available technology tools). More specifically, teachers with constructivist beliefs have been observed to use technology as an information tool (e.g., to retrieve and select information) and as a means to help students develop higher-order thinking and problem solving skills. According to Ananiadou, & Claro (2009) teachers with constructivist beliefs use technology to support students' capacity to apply knowledge and skills in key subject areas and to analyze, reason and communicate effectively as they raise, solve and interpret problems in variety of situations. Beliefs are defined as psychological understandings, premises or propositions felt to be true; whereas knowledge is referred to as "factual propositions and understandings" (Calderhead 1996). The totality of one's belief about the physical and the social world, as well as beliefs about oneself is posited to exist within a comprehensive belief system (Rokeach 1968). Generally, in Pajares' view of 1992 beliefs serve as personal guides that help individuals define and understand the world and themselves.

Objective of the study

The only objective of the study was to assess the attitude of lecturers toward the acceptance and the use of cloud computing technologies during the COVID-19 pandemic among Nigerian universities.

Research Questions

- (a) What was the attitude of lecturers toward the acceptance of cloud computing technologies for teaching during COVID-19 pandemic in the study areas?
- (b) What was the attitude of lecturers to the use of these technologies for teaching?

Research Hypotheses

- (1) There was no significant effect in the lecturers' attitude toward the acceptance of cloud computing technologies for teaching.
- (2) There was no significant effect on the attitude of lecturers to the use of cloud computing technologies for teaching.

Literature Review

The term "digital education" refers to a style of education in which instructors and students use digital technologies to deliver teaching and learning from a remote location (Orij and Torunarigha, 2019). Because many of the younger generations of the twenty-first century were born as "digital natives," who understand the language of digitalization, computers, video games,

and the internet from birth, this has become an increasingly common component of education in many nations. Students have grown up with cellphones, computers, high-speed internet, social media, e-mail, telegram, and other online-based messaging services as part of their daily lives (e.g. WhatsApp) (Orij and Torunarigha, 2019). This type of education is known as digitalized education when these tools are used for instructional reasons. Digitalized education, according to Siemens (2020), is defined as "teaching students of all ages using desktop computers, mobile devices, the internet, software applications, and other sorts of digital technology".

The term cloud refers to a network or the internet, and cloud technologies that are technologies allow learners to access data and various programs through the web. As a result, a cloud may be defined as anything that exists at a distant point. Applications, including e-mail, web conferencing, and customer relationship management (CRM), all operate on the cloud and may be accessed over a public or private network (WAN or LAN). People can access stored information on the cloud irrespective of location or medium of deployment. The cloud network is universal and people use the cloud resources they need and only pay for what they use. There are concepts related with cloud technologies, these are cloud computing and cloud models.

The National Institute of Standards and Technology (NIST) defines cloud computing as a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing assets (e.g., network servers, storage, applications, and services) that can be quickly provisioned and delivered with migrating workloads (Santalesa, 2011). Hewitt (2008) characterized it as "a paradigm in which information is permanently stored in servers on the internet and cached temporarily on clients that include desktops, entertainment centers, table computers, notebook computers, handhelds, sensors, monitors etc."

Cloud computing has been acknowledged generally as such many organizations are adopting it because of its advantages. Some of these benefits are personalized learning, reduced cost, accessibility, improved administrative efficiency of schools and universities, no additional infrastructure, minimal training of personnel, and super computing power. Personalized Learning: Cloud computing enables students to make more informed choices about their education. Students can access a variety of materials and software tools that are tailored to their learning styles and interests by using an internet-connected device. Reduced Costs-Cloud-based Services: can help educational institutions cut expenses and accelerate the adoption of new technology in order to satisfy changing educational needs. Students may use office software for free without having to purchase them, as well as install and maintain them up to date on their computers. Accessibility: Cloud computing resources can be accessed anywhere, using any device, convenient, easy to use, its usage is not mandatory either by downloading any software or upgrading data to cloud before it can be used. The ability of the device to access internet and the internet itself are only the requirement.

Improved Administrative Efficiency of Schools and Universities: Instead of wasting time and resources on IT infrastructure and application setup, colleges and administrative staff may focus on the institution's essential tasks. No Extra Infrastructure: Instead of worrying about buildings and labs, colleges and governments can now focus on their products, which include making more research facilities available to students and making the atmosphere more global. Minimal Training for Personnel: Cloud-computing technology requires fewer personnel to perform more tasks with greater productivity on cloud. The technology is easy to understand and use. Super Computing Power: Cloud-computing is a pooled resources technology where many computers

are connected together to make a server more powerful than a single server thereby provided higher computing and processing capacity (Jain & Pandey, 2013).

Methodology

The study adopted the descriptive cross-sectional survey research design. The population of the study consisted all the lecturers in all the universities in the six states of Southwestern Nigeria which include federal, state and privately owned universities.

Three hundred (300) lecturers were selected using multistage sampling procedure. Three states were randomly selected from the six states that made up the Southwestern region of Nigeria. Purposive sampling technique was then used to select one Federal, State and Private university each from the selected states based on their online visibilities (2020 university webometric ranking). Proportionate sampling technique was then employed in selecting 140 lecturers from the 3 selected federal universities, 90 lecturers from the 3 states universities and 70 lecturers from the 3 private universities. Data for the study was collected using Questionnaire on Acceptance and Application of Cloud Computing Technologies for Teaching (QAACCTT). The data was analyzed using frequency count, percentage and two-way analysis of variance (ANOVA) for the hypotheses generated for the study.

Results

Ho1: Lecturers attitude has no significant influence on their acceptance of cloud computing technologies for teaching in the selected Universities.

Ho2: Lecturers attitude has no significant influence on their application of cloud computing technologies for teaching in the selected Universities.

These hypotheses were raised so as to assess the attitude of lecturers' to the acceptance and application of cloud computing technologies for teaching in selected Southwestern Nigeria universities.

Table A: Two-way Analysis of Variance of the Influence of Attitude on the Lecturers' Acceptance and Application of Cloud Computing Technology for Teaching in the Universities

DEPENDENT VARIABLE: ATTITUDE							
SOURCE	Type III Sum of Squares	Df	Mean Square	F	Sig.		
CORRECTED MODEL	4872.813 ^a	2	2436.406	921.645	.000		
INTERCEPT	2.630	1	2.630	.995	.320		
ACCEPTANCE	3003.813	1	3003.813	1136.284	.000		
APPLICATION	.851	1	.851	.322	.571		
ERROR	483.768	183	2.644				
TOTAL	45250.000	186					
CORRECTED TOTAL	5356.581	185					
A. R SQUARED = .910 (ADJUSTED R SQUARED = .909)							

Table A showed that attitude has significant effect on the lecturers' acceptance of cloud computing technologies for teaching ($F_{(1,186)} = 1136.28$; $p < 0.05$). Attitude has no significant effect on the lecturers' application of the technologies for teaching ($F_{(1,186)} = 3.22$; $p > 0.05$). Therefore, the hypothesis that states that attitude has no significant effect on the lecturers' acceptance and

application of cloud computing technology for teaching is rejected. R squared show that 91% of the effect can be accounted for ($R^2 = 0.91$; adjusted $R^2 = 0.909$).

Conclusion

The study concluded that lecturers' attitude towards the acceptance of these technologies was good but their attitude towards the use of these technologies was not good enough. Therefore, the first null hypothesis that states "There is no significant effect on the attitude of lecturers towards the acceptance of cloud computing technologies for teaching" was rejected while the second hypothesis that states "There is no significant effect on the attitude of lecturers towards the use of cloud computing technologies for teaching" was accepted.

Recommendations

The following recommendations were made;

- (a) Nigerian government and all stakeholders in education should find a way of providing adequate electricity, internet facilities and other necessary infrastructure for effective use of cloud computing technologies for both teaching and learning.
- (b) Government in collaboration with other stakeholders in education should organize frequent train the trainer seminars and workshops for meaningful implementation.
- (c) Lecturers and students should be motivated for the use of this technologies to bring development to Nigerian universities through the use of these technologies.

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