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Influence of Cloud Computing on Teaching Effectiveness of Business Education Courses: A Case Study of University of Calabar, Cross River State

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Abstract

The main purpose of this study was to investigate perceived influence of cloud computing on teaching effectiveness of Business education courses in University of Calabar. Specifically it determined ways cloud-based delivery and cloud-resource sharing could influence teaching effective effectiveness as perceived by Business education Lecturers. It was a descriptive survey. Two research questions guided the study. Population comprised all the 22 Business education lecturers from University of Calabar, Calabar. Questionnaire was used to collect data. A 24- item Mean ($\overline{X}$) and standard deviation were used for data analysis. Findings reveal 11 ways ($\overline{X} \geq 2.50$) and 11 ($\overline{X} \leq 2.50$) cloud based delivery and cloud resource sharing have respectively influenced teaching effectiveness of Business education lecturers in University of Calabar. Based on these findings, three recommendations were made, among others that awareness of the importance of cloud computing should be created in University of Calabar, and other institutions.

Keywords: Cloud, Computing, Delivery, Resource, Teaching, Effectiveness and Business education.

Introduction

Business education is one of the vocational courses offered in Universities. It plays a vital role towards the economic growth and development of the society. Business education according to Federal Republic of Nigeria (FRN) (2013) is a conglomerate of courses that is concerned with the acquisition, development and inculcation of the proper values for the survival of the individual and the society. Otamiri (2014) defined business education as education that involves the

study of technologies and related sciences and the acquisition of practical skills including teaching skills, attitudes, understanding and knowledge related to occupation in various sectors of our economy and social life.

Okoli and Azih (2015) explained that business education is the education for the acquisition and development of skills and competencies, attitudes and attributes which are necessary for efficiency of the economic system. Thus, business education helps individuals to acquire saleable skills that will enable them fit into various business organizations or be self employed in the absence of paid employment. Business education in Nigeria is offered in the universities at undergraduate and post graduate levels. Business education as a course houses various options namely: Office technology and management option, accounting option, marketing option, and entrepreneurship option.

Oyinlole and Mamman (2018) observed that the growth in human population and technology advancement has revolutionised the process of teaching and learning. Hence the 21st century is referred to as a global village where knowledge acquisition has gone beyond the confine of a classroom. Business education is not left out in these technological changes. Currently businesses are experiencing high technological changes as a result of the globalized nature of business. These days we talk of electronic accounting, use of modern office technology, electronic marketing, electronic books etc. Accordingly, the universities must carry out these changes in order to be service oriented and to fulfil excellence in performance, and this will not be achieved unless the institutions do their best to apply modern trends in Information Technology (IT) services, such as cloud computing as an aspect of e- learning.

Cloud computing is a general term that deals on sending of hosted services through the internet. Cloud computing refers to manipulating, configuring and accessing applications online. It offers online data storage, infrastructure and application. It is the provision of vital information technology capabilities like software and hardware from a third party over a network. Cloud computing is a type of computing that is highly scalable and uses virtualized resources that can be shared by clients. Virtualization is one of the prerequisite for the realization of cloud computing. It enables the resources to be used when they are necessary (Hasan, 2019) A client using cloud computing can communicate with a lot of servers simultaneously and these services exchange information between themselves. This is based on the fact that cloud computing has distinct characteristics that differentiates it from traditional web hosting (Rouse, 2019). Through an Internet service connection, cloud storage enable users access to download data on any chosen device like a laptop, a tablet or Smartphone. Cloud storage users can also edit their documents simultaneously with other users as well, making it easier to work outside the classroom. Usage of Cloud computing in education is vital as recognized by many educational institutions around the world hence the

use of cloud based delivery in institutions of learning.

Cloud-based delivery is seen as a process of presenting the planned lesson over the cloud. This Cloud based delivery is vital for effective teaching and learning of undergraduate and post graduate business education courses in the various options offered in business education department. The teaching can be done without the physical presence of the teacher in the classroom but by connecting the internet so that he can participate in the learning process on-line. As observed by Huang and Liu (2013) using cloud-based learning systems, students and lecturers benefit from the advantages of collaborative learning, virtual laboratories, virtual libraries, online storing, constant communication and most importantly equal educational chances. Salome and Udukeke (2018) defined Cloud instructional delivery as an area where cloud computing can be deployed to ensure effective teaching and learning which relates to the impartation of ideas, values, competencies, knowledge and skills by the lecturer to students. This involves the use of various applications and tools such as voice mail, videoconference, YouTube, WhatsApp etc. A videoconference is a live, visual connection between two or more people residing in separate locations for the purpose of communication. Contributing on relevance of video conferencing in teaching effectiveness, Salome and Udukeke (2018) see teaching through video conferencing as a unique method of providing real-time face-to-face interaction that enables immediate students and lecturers' interaction and feedback. Srinivasan and Getov (2011) explained that cloud based delivery through video-conferencing is a unique method of providing real-time face-to-face interaction that enables immediate peer and lecturer interaction and feedback. For instance, a guest lecturer can teach students from remote locations using video-conferencing tools and applications such as SKYPE which can also be projected on a large screen. Resources used for teaching and learning can equally be shared during cloud based learning.

Cloud resource sharing which entails many students and lecturers using the materials provided in the web irrespective of the location of the users gives students and lecturers the opportunity of making use of different reading materials for teaching and learning of Business education courses. The data or software applications are accessed through the web from any device irrespective of the user's location unlike the traditional form of learning where the information is stored on the device of the user. Nicholson, (2015) rightly observed that by using cloud based e-learning, students, lecturers and other academic members in tertiary institutions can access online file storage, e- mail, databases, educational applications and software (virtual laboratories) and e-resources, anywhere, any time and by any device. Teaching and learning resources can adequately be shared through the cloud.

Sunita and Sing (2012) contended that cloud resources sharing create interactive communication links where the teacher manages the human,

material, time and space to make sure that instructional events are recalled, provide feedback and provide access to learning in order to enhance performance of both lecturers and students. According to Pranay, Sumitha and Umay (2013), Cloud computing can be used in both teaching and sharing learning materials. For instance, a lecturer needs to share a journal paper or lecture materials with fifty of his students, using this method, he can e-mail this materials to his students.

Considering the current financial problems experienced in Nigeria, cloud computing is a good alternative for educational institutions that have limited financial resources to operate their information systems effectively without incurring much cost on acquisition of computers and network machines. With the use of Cloud computing, IT operations are less expensive since the need for licensing and software updating will be reduced and functional capabilities are achieved. This will help the institutions to become more competitive due to availability of high-performance resources and highly reliable and available applications made available to the lecturers and students.

By using cloud-based learning systems school-aged learners and instructor's benefit from the advantages of collaborative learning, virtual laboratories, virtual libraries, online storing, constant communication and most importantly equal educational chances. For all these reasons, it is suggested that higher education institutions should base their e-learning system on cloud to achieve teaching effectiveness.

Teaching effectiveness is paramount to ensure that the objective of a program is achieved. Effective teaching can be seen in many forms including teacher's knowledge of subject matter, method of lesson presentation and nature of interaction between him and the students, his colleagues, management, parents etc. Effective teacher has a good knowledge of the learning pattern of his students in terms of their strengths and weaknesses. This helps him to plan his lesson well so that there will be good mastery of the subject matter presented to the students. Effective teaching has to carefully pass through three basic steps viz: planning the instruction, delivering the instruction planned and assessing learning outcomes. Instructional methods, communication approaches and assessment techniques can be adequately organized using cloud computing. Instructor made videos, on-line discussions can be utilized for teaching and learning. Integrity can be maintained during on-line examinations by the use of multiple version of question paper, multiple step problem solving questions and the use of lock down browsers.

For several years now, the performances of students in business education have been below average (poor). The quality of teaching and the strategies used by the lecturers in teaching Business education courses in University of Calabar could be described as inadequate considering that we are in an electronic era and much emphasis is placed on on-line teaching and learning. In fact, it has become a major concern for the stakeholders such as parents and policy

makers (Chukwura, 2013). It has been observed by the researchers that lecturers in the university seem to still attach to the traditional method of teaching (lecture method) and are recycling outdated materials which make them lag behind in contemporary demand for an improved delivery approach in business education courses. However, the Federal Ministry of Education had in 2007 advocated for change in the strategies of imparting knowledge in all courses to students. This required lecturers to embrace computer and internet technologies as teaching tools to transform the present isolated, lecturer-centred and textbook bound classroom into student-centred and computing environment. It is on this background that this study was carried out to find out the perception of lecturers on the influence of cloud computing on effective teaching and learning of business education courses in University of Calabar.

Purpose of the study

The purpose of this study was to investigate Business education lecturers' perception of the influence of cloud computing on teaching effectiveness in University of Calabar. Specifically, the study determined ways each of the following could influence teaching effectiveness among Business education Lecturers in University of Calabar.

1. Cloud-based delivery.
2. Cloud resource sharing.

Research questions

The following research questions were raised to guide the study:

What are perceived ways each of the following could influence teaching effectiveness of business education lecturers in University of Calabar:

1. Cloud-based delivery?
2. Cloud resource sharing?

Methodology

***Design of the study*:** The design adopted for the study was a descriptive survey.

***Area of the study*:** The study was conducted in University of Calabar, Cross River State. There are 4 government owned tertiary institutions in Cross river state. Two of the tertiary institutions are University of Calabar and Cross River University of Technology, Calabar. The two universities are federal and state universities respectively and both offer business education. The choice of University of Calabar is because it is an older school and a federal university.

***Population of the study*:** The population of the study comprised 22 Business education Lecturers from University of Calabar, Cross River State. In the university they have 12 male and 10 female lecturers. The Lecturers comprises of 2 Professors, 1 Senior Lecturer, 7 Lecturer II, 9 assistant lecturers and 3 Graduate Assistants. The researchers made use of all the population as it was considered manageable.

***Instrument for data collection*:** A 24 item questionnaire titled "Lecturers' Perception of influence of Cloud Computing on Teaching Effectiveness of Business education Questionnaire (LPCCTEBEQ) was used for data collection. The instrument was constructed on 4-point scale of Strongly

Agreed (SA) - 4.00, Agreed(A) – 3.00, Disagree (D)-2.00 and Strongly Disagree (SD) – 1.0

***Data collection method*:** Data required for this study was collected through the use of copies of a questionnaire administered to the Business education lecturers in the department of Business education, University of Calabar by the researchers and the research assistants. All the copies of the questionnaire were returned by the respondents after responding to the questions.

***Data analysis technique*:** The data collected for this study were analyzed using descriptive and inferential statistics. The research questions were answered using mean (X) and standard deviation (SD). Any item ~~w~~ith mean score equal to or greater than 2.50 was regarded as "Agreed", while any item with mean score less than 2.50 was regarded as "Disagreed".

Research question 1

Ways Cloud-Based Delivery Influence Teaching Effectiveness of Business Education Lecturers in University of Calabar.

Table 1: Mean ($\overline{X}$) Responses and Standard Deviations Perceived Influence of Cloud-Based Delivery on Teaching Effectiveness of Business Education Lecturers in University of Calabar.

S/N	Ways Cloud-based Delivery influence Teaching Effectiveness	$\overline{X}$	SD	DEC
1	Lecturers ensure that adequate instructional objectives are selected in line with the course content.	3.50	0.51	A
2	Lessons are planned appropriately to ensure that they are in line with the instructional objectives.	3.50	0.51	A
3	Students have access to technologies that are previously not affordable	3.50	0.51	A
4	Cloud based delivery afford lecturers and students easy access to requisite information	3.54	0.50	A
5	Cloud computing technology facilitates the use of a wide variety of instructional strategies designed to maximize learning	3.40	0.51	A
6	Through cloud based delivery data can easily be stored and retrieved when required.	3.45	0.50	A
7	Enrich your students with technology enabled education especially in the teaching of skilled business courses	3.54	0.50	A
8	Educational delivery is enhanced at reduced cost	3.40	0.51	A
9	Cloud computing provides lecturers and students with relevant research materials.	1.59	0.50	D
10	Using competent lecturers of business education to teach students from remote locations.	3.40	0.51	A
11	Ensure evaluation of students through virtual means at the end of the semester	3.40	0.50	A

12	Giving of assignments to students and receiving same from students through e-mail.	3.50	0.51	A
13	Incorporating cloud computing technology into instruction enable students access their results easily.	1.59	0.50	D

$\overline{X}$ = Mean; SD= Standard deviation, N = Number of respondents (22); DEC= Decision

Table 1 shows that all the items except items 9 and 13 were answered in affirmative with their mean score above 2.50(≥2.50). This means that the lecturers in both institutions believe that cloud-based delivery would be of great benefit if used in teaching Business education courses in their university. While the responses in items 9 and 13 had their mean scores lower than 2.50 which showed that some of the lecturers in the institution do not support the fact that cloud computing provide lecturers and students with relevant research materials and incorporating cloud computing technology into instruction enable students access their results easily.

Table 2: Mean ($\overline{X}$) Responses and Standard Deviations on Perception of Business Education Lecturers on Ways Cloud Resources Sharing Influence on their Teaching Effectiveness.

S/N	Ways Cloud Resource Sharing Influence Teaching Effectiveness	$\overline{X}$	SD	DEC
1	Sharing course materials with students through email.	3.31	0.47	A
2	Accessing the teaching resources of leading vocational based institutions.	3.45	0.50	A
3	Facilitating of class discussion through online chat group.	3.68	0.47	A
4	Making recent publications in the field of business education available to students on WhatsApp	3.54	0.50	A
5	Making recent publications in the field of business education available to students on email	3.40	0.59	A
6	Sharing lecture materials with students through WhatsApp.	3.45	0.51	A
7	Easy and unrestricted access to services and resources by lecturers and students.	3.50	0.50	A
8	Learners can use their own devices to access lecturer's lesson notes.	3.40	0.50	A
9	Sending of assessment scores to students through email.	3.54	0.50	A
10	Support sharing of learning resources such as lesson notes, project reports etc.	3.54	0.50	A
11	Creating interaction and communication links between teachers and students.	3.45	0.50	A

$\overline{X}$ = Mean; SD= Standard deviation, N = Number of respondents (22); DEC= Decision

Table 2 reveals that all the lecturers in the institution agreed that cloud resources sharing can influence their teaching effectiveness positively. All the items in table 2 above have their mean scores greater than 2.50 ($\overline{X}$ ≥2.50). These

are therefore 11 ways cloud resource sharing influence teaching effectiveness of Business education Lecturers in University of Calabar.

Discussion of Findings

The researchers discussed the findings of the study based on the research questions that guided the study.

The findings from the result of the analysis of research question one in table 1 showed that the respondents agreed that cloud-based delivery will enhance the teaching effectiveness of Business education lecturers in University of Calabar. This finding is in line with that of Bora & Ahmed (2013), who maintained that Cloud computing according to its terms is the most appropriate way to improve teaching and learning by reducing implementation and maintenance costs of computer laboratories, increasing mobility of classroom and teaching materials, and quick access to learning materials. This is because cloud based delivery affords the learners the ability to receive lectures irrespective of their location. The finding is in line with the explanation of Sunita and Sing (2012) that cloud delivery techniques help to expand access to education, strengthen the relevance of education to the increasingly digital workplace; raise the educational quality by enabling knowledge to be spread electronically for wider range of innovative, informative and educational purpose in order to bring global world into the classroom.

The finding also agreed with that of Srinivasan and Getov (2011) who said that teaching through video-conferencing is a unique method of providing real-time face-to-face interaction that enables immediate peer and lecturer interaction and feedback. A guest lecturer can teach students from remote locations using video-conferencing tools and applications such as SKYPE which can also be projected on a large screen. Supporting the influence of cloud based delivery on teaching and learning, Huang & Liu (2013) stated by using cloud-based learning systems, school-aged learners and instructors benefit from the advantages of collaborative learning, virtual laboratories, virtual libraries, online storing, constant communication and most importantly equal educational chances. They also asserted that students of 21st century use the technology constantly in their daily life, lecturers can use this habit as a way to gather their student's attention more on their study. Although traditional e-learning limited students and lecturers communication, collaboration and resources, cloud computing technology will be a platform that can make this limitation disappear. By using this technology, lecturers can be more involved with student's group activities, communications and controlling their real-time online work and by that it makes it easier for the lecturers to evaluate the students. This finding is also in line with the report of Pranay, Sumitha and Uma (2013) that Cloud Computing provides a new solution to establish a unified open and flexible network teaching platform and reduce the hardware input. Cloud computing can help education institutions improve productivity, maintain education

institutions own data centres and enhance hardware and software resources management, which are needed to provide educational quality, scientific and research activities and students projects (Al-Rousan and Al-Ese, 2019). This will enhance the availability of relevant research materials for Business education students.

Huang & Liu (2013) ascertained that students of 21st century use the technology constantly in their daily life and lecturers can use this habit as a way to gather their student's attention more on their study. Although traditional e-learning limited students and lecturers communication, collaboration and resources, cloud computing technology will be a platform that can make this limitation disappear. By using this technology, lecturers can be more involved with student's group activities, communications and controlling their real-time online work and by that it makes it easier for the lecturers to evaluate the students. This is because information technology has brought radical changes to many aspects of current life and the education sector in general, and to academic institutions in particular. Cloud computing has been proved to be attractive to academic institutions due to the benefits that it offers. Cloud computing offers academic institutions the opportunity to concentrate more on teaching and research activities rather than on complicated IT arrangements and software systems (Al-Rousan and Al-Ese, 2019)

Cloud-based services can be available free or with a quite lower-cost platform; students and lecturers can use it in their daily activities and because of the nature of cloud computing, all the system is centralized and so much easier and faster to monitor and maintain. Bora and Ahmed, (2013) observed that cloud computing technology has given many advantages in their communication and learning strategies to students and lecturers. Cloud computing according to its terms is the most appropriate way to improve teaching and learning by reducing implementation and maintenance costs of computer laboratories, increasing mobility of classroom and teaching materials, and quick access to learning materials. At the end, by using cloud based e-learning, students, lecturers and other academic members in tertiary institutions can access online file storage, e- mail, databases, educational applications and software(virtual laboratories) and e-resources, anywhere, any time and by any device (Nicholson, 2015). For all these reasons, it is suggested that universities should base their e-learning system on cloud. Teaching and learning resources can adequately be shared through the cloud.

The use of this technology would enable instructors to be more involved with student's group activities, communication and controlling their real-time online work and by that it makes it easier for the instructors to evaluate the students (Huang & Liu, 2013). In addition to that, cooperation is improved by using cloud computing because the hardware is not limited and there are internet connection for students and instructors to get strong multimedia capabilities such as video

conferencing and group game-based competition with any device that they own.

Tan; Chen; Li; Li; Wang; & Hu (2014) maintained that creating doubts on the validity of assessment methods, lack of live interaction and trust issues are amongst the critics raised by old school of educating against e-learning. Therefore, it is crucial to find simple and effective solutions to contain these critics, provide concrete evidences for the validity of evaluation method, and gain the trust of all users of e-learning systems. Therefore, cloud-based e-learning system was introduced and adapt to e-learning platform. This has become imperative for Business Education lecturers to get themselves abreast with cloud computing as a teaching technique for effective and flexible lesson delivery.

The findings from the result of the analysis of research question two in table 2 showed that lecturers believe that cloud resources sharing will positively influence the teaching effectiveness of Business education lecturers in tertiary institutions. In confirmation of the above findings, Salome and Udukeke (2018) reported that cloud can facilitate sharing of learning resources, activities and professional collaboration between all participants in the learning processes through sending and receiving of information. Cloud computing according to them supports remote storage, sharing of learning resources, collaboration and interaction between lecturers and students, which are prerequisites for achieving higher efficiency in the educational process.

This finding is in line with Sunita and Sing (2012) who contended that cloud resources sharing creates interactive communication links where the teacher manages the human, material, time and space to make sure that instructional events are recalled, provide feedback and provide access to learning in order to enhance performance of both lecturers and students. This will enhance adequate provision of learning resources in business education for teaching and learning irrespective of the number of users and their location. In line with this view Bora and Ahmed (2013) explained that, as the cloud computing is internet based, it provides us with the ability to share the resources, software, application and information. Salome and Udukeke (2018) equally opined that cloud can facilitate sharing of learning resources, activities and professional collaboration between all participants in the learning processes through sending and receiving of information. It also supports remote storage, sharing of learning resources, collaboration and interaction between lecturers and students, which are prerequisites for achieving higher efficiency in the educational process.

Kreljakuleloric, Raco and Tomlijanovic (2013) affirmed that cloud computing allows for greater flexibility and mobility in the use of resources for teaching and learning, greater degree of collaboration; communication and sharing of resources and creates a personalized learning environment or virtual communities of teaching and learning. For instance, a student is asked to share some journal papers with a

lecturer and forty students based on a client-server computing model, the student can share the papers with the lecturer by uploading the papers to SPIN. However, the student needs to use e-mail to share the papers with other students. This is because SPIN uses the concept of one-way partnership where a lecturer can share materials with his students and vice-versa.

Salome and Udukeke (2018) equally agreed that cloud can facilitate sharing of learning resources, activities and professional collaboration between all participants in the learning processes through sending and receiving of information. Cloud computing according to them supports remote storage, sharing of learning resources, collaboration and interaction between lecturers and students, which are prerequisites for achieving higher efficiency in the educational process. Cloud computing has a lot of benefits in teaching and learning in schools. It enables the students perform their academic tasks, delivers computing and storage resources to its users/customers, gives students access to many technologies, and enrich the students with technology enabled education.

Conclusion

On the basis of statistical analysis and the findings of the study, the researchers concluded that:

The application of cloud computing as an instructional technique will improve and ease business education lecturers in lesson notes preparation and presentation. Cloud computing will provide lecturers and students with the ability to share the resources, software, application and information as well as facilitate sharing of learning resources, activities and professional collaboration between all participants in the learning processes through sending and receiving of information through cloud.

Recommendations

In the light of the findings and conclusions drawn from the study, the following recommendations are made:

1. Awareness of cloud computing importance at University of Calabar and other tertiary institutions in Nigeria should be created by putting a mechanism in place to activate cloud-in the institutions.
2. Government should make sure that the institutions networking environment is ready for cloud computing in addition to offering the necessary financial support to activate cloud computing at tertiary institutions in Nigeria.
3. Lecturers in University of Calabar and other tertiary institutions at all levels should embrace the cloud computing approach to ensure teaching effectiveness.

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