



## **BUSINESS EDUCATION AND CLOUD COMPUTING: PROSPECTS AND CHALLENGES**

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### **Abstract**

*This study investigated Business Education and Cloud Computing: Problems and Challenges in Abia State, Nigeria. A total of 228 respondents; comprising of 203 Business Education final year students (both Degree and NCE) plus 25 Business Educators from four tertiary institutions were used for the study. The study is a descriptive study guided by three research questions and three null hypotheses. Data was collected using a structured questionnaire constructed on a four-point scale. The instrument was face-validated and a reliability coefficient of 0.87 was established. Data collected were analyzed using Mean ( $\bar{X}$ ) and Standard Deviation (SD) to answer the research questions while the t-test statistics was used to test the hypotheses at 0.05 level of significance. The findings revealed that both groups of respondents (Educators and Students) agreed that Cloud Computing can be effectively applied with immense benefits in various aspects of Business Education; though this is presently faced with various challenges. There was no significant difference between the mean ratings of Business Educators and of students in each case, therefore the three null hypotheses were upheld. Recommendations include that government, institutions as well as Educators and students should intensify efforts towards upgraded ICT skills, competencies and versatility for a sustainable and re-branded Business Education.*

**Key Words:** Cloud Computing, Pandemic, Prospects, Challenges

### **Introduction**

Education remains the spring board of progress in any given society in the world. It is a light that shows mankind the right direction to follow. In view of this, the Nigeria Blue-Print on Education – National Policy on Education (NPE) duly stipulated that Education is an instrument per excellence for achieving national objectives (Federal Republic of Nigeria, (FRN), 2014). Supporting this assertion by FRN, Ogedi and Okoro, (2017) averred that Education is an essential tool for national and global development in terms of industrial expansion and sustainability, manpower production, technological advancement and quality standard of living. It is therefore evident that Education serves as the pivot for meaningful and sustainable developments in any society or nation.

Business Education, which is a multi-disciplinary, trans-organizational, skill-based type of education has proved to be a tactical measure for societal development. This is because Business Education is a comprehensive discipline whose instructional programme encompasses the knowledge, attitudes, competencies and skills needed by all persons in order to effectively manage their personal, business and economic lives. Ekoh (2016) opined that Business Education covers a wide range of spectrum of economic activities in any society as well as the desirable business competencies appropriate for self-employment which is particularly pertinent in the present global economic situation, by equipping individuals with lifelong skills for self – reliance. Business Education provides students with the needed competencies, skills, knowledge, understanding and attitudes to perform as workers in industries, civil service and also as entrepreneurs and successful owners/managers of successful



businesses (UtoWare&Aniya, 2014). Therefore, it is work-focused, skills-based, results-oriented and technology-based, (Ugwoke, 2011). Supportively, OnyesomandOkolocha in Victor-Igwe, Baba and Iwuoha (2015) posit that Business Education is the intellectual and vocational preparation of students for earning a living in the contemporary industrial and business environment.

Consequently, Osuala (2002) stipulated that the objectives of Business Education are to: enable students explore and learn about the world of work and the relevant interest and career areas of their choice; provide students with the necessary occupational information found in the world of work; enable students acquire skills in fields of their choice and to enable students prepare for choose, enter into and progress in occupations of their choice.

A cursory look at the objectives shows that a great deal of resources is required by Business Educators to impart the necessary skills and knowledge that the curriculum demands for achieving the stated objectives. There is an avalanche of literature suggesting that Business Education Curriculum contents have been communicated to students basically through traditional pedagogy. Traditional pedagogy simply refers to a pre-technology education context in which the teacher is the sender of the source, the educational material is the information or message and the student is the receiver of the information. Krishna, (2013) opined that traditional pedagogy involves just a book, a piece of chalk and a blackboard. He further added that traditional pedagogy is generally dull, inefficient, prone to weary students and inevitably yields little, slow and poor results; and that such teaching methods are not suitable for science, technology and management, Business Education inclusive.

In a similar view, Nazzal (2014) stated that traditional pedagogy involves teacher-centric classroom/lecture methods. Here, teachers basically fit into the mode of knowledge dispensers rather than facilitators, chalk and talk methods, regimented classrooms, little or no collaboration and group learning, more emphasis on examinations and results rather than understanding of concepts as well as misalignment between objective activities and assessment. Traditional pedagogy is saddled with various limitations which include that it demands the physical presence of both the teachers and learners in a designated classroom setting which seems not to encourage collaborative learning; thereby making students learn by memorizing rather than understanding, with emphasis placed on theory with little or no practical, hands on and real life situations (Demodharan & Rengarajan, 2013). Unfortunately, this method of instructional delivery has been the prevalent pedagogy for imparting knowledge even in skill-based courses such as Business Education.

The issue of demanding physical presence of both teachers and students as characterizes the traditional pedagogy, poses an increasingly alarming threat to instructional delivery in cases where the teachers and students cannot meet physically. This limitation was made profound with the outbreak of the Covid-19 Pandemic, insecurity challenges, incessant industrial actions, and so on that have bedeviled the nation recently. The pandemic particularly truncated educational processes thereby creating one of the biggest disruptions of educational systems in history, affecting nearly 1.6 billion learners in more than 190 countries and all continents in the globe. Closure of schools and other learning spaces have affected 94 percent of the world's student population, up to 99 percent in low and middle income countries (United Nations, 2020). The outbreak of the pandemic which led to closure of schools and other learning spaces as highlighted by United Nations, created a large rift between teachers and students which cannot be remedied by the traditional pedagogy as led to instant and sudden cessation of instructional delivery of knowledge and skills in classroom settings. This has very grave implications, particularly for skill-based courses such as Business Education which should be sequential, cumulative and time-bound.

As a result, a paradigm shift from traditional pedagogy to more innovative and virtual pedagogies has become critical. The need for a resolute departure from traditional pedagogy to e-learning is more glaring than ever because the era of perceiving Business Education as mere "Shorthand typing and book keeping" is gone for good (Victor-Igwe, 2015). E-Learning basically involves the use and application of more innovative modes of service delivery such as internet, websites, personal computers, tablets, PCs, laptops, android cell phones, Learning Management Systems and other



emerging technologies to improve the teaching and learning process. One of such innovative modes of instructional delivery is Cloud Computing.

Cloud computing is a new paradigm which provides applications and services that can be accessed through the internet with the ability to share, manage and store data, which is physically hosted on remote servers instead of using in house resources or personal machines (Foster, Zhao, Raicu & Lu, 2008). Sultan(2013), opined that through the use of Cloud Computing, the common problems of limited computational power and limited physical data storage can be ameliorated. It is considered a highly effective, convenient and centralized sharing pool through which computer resources can be deployed and accessed with minimum overhead as this synthesis integrates hardware, software, networks and storage options to deliver shared computing solutions in which applications and other services would be provided over the internet.

Cloud computing provides values that are dissimilar to the traditional IT environment. It offers economies of scale through aggregating computing resources and virtualization, ensures a global reach of information and services using computing environment which allows on demand scalability and minimal initial investment. It also provides pre-built services and solutions together with the required skills for running and maintaining them, hence, reducing the risk and need for the institution to maintain a group of staff that are highly skilled and scarce to find. With the use of cloud computing, the end users do not have to purchase new equipment, maintain hardware, update existing software, obtain license for the software or data synchronization. This is because the cloud service package encompasses them all unlike the IT environment. Consequently, (Anshari et al, 2016) added that cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (such as networks, servers, storage, applications and services) that can be rapidly provisioned and released with minimal management efforts or service provider interactions.

According to Mell and Grance, (2009), cloud computing is a model for convenient and rapid network access to a shared pool of computing resources that can be provisioned with minimal management efforts or service provider interactions. It comprises of five (5) essential characteristics which are:

- i. **On demand self-service:** Using Cloud Computing, a consumer can unilaterally access provision to computing capabilities as needed automatically without requiring human interaction from each services provider.
- ii. **Broad network access:** Cloud computing makes capabilities available over the network which is accessed through standard mechanisms thus promoting the use of heterogeneous thick or thin client platforms such as mobile phones, laptops and PDAs.
- iii. **Multi tenancy:** It allows the computing resources of the provider to be pooled to serve multiple consumers using a multi-tenant model with different physical and virtual resources dynamically assigned and reassigned according to the demands of the consumers.
- iv. **Rapid elasticity:** Here, the capabilities can be rapidly and elastically provisioned, in most cases automatically, to quickly scale out and rapidly released to quickly scale in.



- v. **Measured service:** The cloud service providers automatically control and optimize resource use by leveraging a metering capability at some level of abstraction appropriate to the type of service.

According to Harsimran and Kamayani (2015), three major types of cloud computing service delivery models are: Infrastructure as a service (IaaS), Platform as a service (PaaS) and Software as a service (SaaS). Moreover, cloud computing comes in different deployment models viz: Private or Internal cloud, Community cloud, Public or External Cloud and Hybrid cloud. In addition, Chentan, Basavaray and Sankalp (2016) opined that cloud computing can positively influence academic fields such as: interaction sessions, teamwork and flexibility. Furthermore, the importance of cloud computing in the field of Education include: enhanced productivity and more efficient educational practices, reduced expenditures, increase in collaborative work, enhanced backup information, support in financial and HR Management, facilitating institutional accreditation and promoting lecturer's flexibility. On the flip side, Khali et al (2017) averred that cloud computing also imply taking of 'cloud risks' such as: data insecurity, privacy issues, internet connection, reliability and so on. Such cloud risks can be guarded against through effective application of security principles. It seems obvious that with cloud computing, Business Educators and students can do a lot such as file sharing, service computing, collaboration systems and online education. However, the Educational sector in developing countries such as Nigeria are buffeted with some hurdles that make migration to cloud computing relatively slow. Some of these include retrieving the maximum resource in minimum time, technical communications like system performance, bandwidth, complex technology and lack of finance.

### **Statement of the Problem**

Business Education is the intellectual and vocational preparation of students for earning a living in ever-changing contemporary industrial and business environments. It is expected that capital intensive, skill-based courses such as Business Education should be proactive and responsive to the dynamics of change in order to continually render value returns to all stakeholders. It goes without saying that the traditional pedagogy of content delivery is abysmally ineffective for this highly needed field of study. This became more evident in the face of the ravaging Covid 19 Pandemic and its aftermath, volatile security situations around the globe, volatile business trends, etc. Therefore, it is expected that Business Educators and students should take the lead technologically by continuously "pushing the bar" and "blazing the trail" with regards to embracing and driving positive changes in the area of new technologies in order to remain relevant, formidable and vibrant. This is because education cannot afford to wait neither should Business Education accept the 'docile' mode of being put on hold for whatever reasons. This is because most skills are cumulative and time-bound.

It therefore appears pertinent that Business Education should embrace more innovative pedagogies such as Cloud Computing for more effective, virtual and seamless content delivery hence the study investigated the prospects and challenges of cloud computing in Business Education.

### **Research Questions**

This study sought answers to the following questions:

1. What are the areas in which Cloud Computing can be applied in Business Education?
2. What are the benefits of using Cloud Computing in Business Education?
3. What are the challenges of adopting Computing in Business Education?



## Research Hypotheses

The following null hypotheses were formulated to be tested at 0.05 level of significance to further guide the study:

**Ho1:** There is no significant difference between the mean ratings of Business Educators and students on the areas in which cloud computing can be applied in Business Education.

**Ho2:** There is no significant difference between the mean ratings of Business Educators and students on the benefits of using Cloud Computing in Business Education.

**Ho3:** There is no significant difference between the mean ratings of Business Educators and students on the challenges of using Cloud Computing in Business Education.

## Method

Descriptive survey research design was adopted for this study. The population of the study comprised of 808 Business Education Students and 25 Business Educators in the four (4) higher institutions that offer Business Education in Abia State i.e. Abia State University Uturu, Gregory University Uturu, Diamond College of Education Aba and College of Education (Technical), Arochukwu.

The final year students comprising of 203 students in NCE year III and Degree year IV in the institutions and the 25 lecturers were purposively selected for the study, giving a sample size of 228. A structured questionnaire which comprised of two section (A & B) was the instrument for data collection. Section 'A' sought to elicit the demographic profile of the respondents while section 'B' comprised of 30 items on a four-point scale. Numerical values were assigned to the scale on the extent of agreement ranging from strongly Agree (SA) – 4 points, Agree (A) – 3 points, Disagree (D) – 2 points and Strongly Disagree (SD) – 1 point. Two hundred and twenty eight (228) copies of the questionnaire were personally administered, duly completed, retrieved and utilized for the study. The instrument was validated by three experts. Cronbach Alpha Reliability test was used to determine the reliability of the items and this yielded a co-efficient of 0.87 which is considered adequate. Data generated were analyzed using the Arithmetic Mean ( $\bar{X}$ ) to answer the three research questions that guided the study while the t-test statistical tool was used to test the three null hypotheses at 0.05 level of significance. A mean cut- off point of 2.50 was established. Therefore, any item that generates a mean score of 2.50 and above i.e.  $\bar{X} \geq 2.50$  was regarded as accepted or agreed, whereas, a mean score of less than 2.5 i.e.  $\bar{X} < 2.50$  was considered as rejected or disagreed. On the flipside, if the calculated value is less than the table value, then the null hypothesis is upheld and vice versa.

## Results

**Research Question 1:** What are the areas in which Cloud Computing can be applied in Business Education?



**Table 1: Mean and Standard Deviation of the Respondents on the areas in which Cloud Computing can be applied in Business Education**

| S/N                 | Item Statements   | $\bar{X}_T$ | $SD_T$      | $\bar{X}_S$ | $SD_S$      | Remarks      |
|---------------------|---|-------------|-------------|-------------|-------------|--------------|
| 1.                  | Cloud computing provides web-based messaging tools such as Google mail, Google talk to students and lecturers free.                             | 2.84        | 0.50        | 2.97        | 0.52        | <b>Agree</b> |
| 2.                  | It can be used for Educational administration of student's information, teachers' information, courses' arrangement and other daily management. | 2.57        | 0.55        | 2.78        | 0.61        | <b>Agree</b> |
| 3.                  | 4A (Anyone, Anytime, Anyplace & Anything) support service in distance Education.  | 2.83        | 0.55        | 2.84        | 0.59        | <b>Agree</b> |
| 4.                  | It can host institutional learning management systems (LMS) such as Moodle and Blackboard in the cloud.   | 2.80        | 0.80        | 2.79        | 0.82        | <b>Agree</b> |
| 5.                  | It offers resource library where students can learn from  | 2.82        | 0.67        | 2.95        | 0.73        | <b>Agree</b> |
| 6.                  | It allows for team collaboration, real time analysis, student records management and student tracking.  | 2.83        | 0.65        | 3.00        | 0.72        | <b>Agree</b> |
| 7.                  | It allows collaborative learning distance Education.  | 2.78        | 0.62        | 2.89        | 0.66        | <b>Agree</b> |
| 8.                  | Virtual computing lab (VCL)   | 2.59        | 0.49        | 3.41        | 0.31        | <b>Agree</b> |
| <b>Cluster Mean</b> |   | <b>2.87</b> | <b>0.62</b> | <b>3.04</b> | <b>0.57</b> | <b>Agree</b> |

The result on table 1 shows the mean ratings of business educators and students with regards to the areas in which Cloud Computing can be applied in Business Education. The table showed that the respondents jointly agreed to all the items because their mean scores for each of the items were above 2.50. Cluster mean for Business educators had mean rating of 2.87 while the Cluster mean for students had a mean rating of 3.04. These overall mean indicate that all the items were accepted by the respondents as areas in which cloud computing can be applied in Business Education.

**Research Question 2:** What are the benefits of using Cloud Computing in Business Education?



**Table 2: Mean and Standard Deviation of the Respondents on the benefits of using Cloud Computing in Business Education?**

| S/N                 | Item Statements  | $\bar{X}_T$ | $SD_T$      | $\bar{X}_S$ | $SD_S$      | Remarks      |
|---------------------|--|-------------|-------------|-------------|-------------|--------------|
| 9.                  | Cloud computing enables teachers to quickly arrange Educational services to suit each student's uniquely learning style.               | 2.77        | 0.72        | 2.94        | 0.80        | <b>Agree</b> |
| 10.                 | Through resource pooling, cloud computing averts the cost of installing I T infrastructure.  | 2.73        | 0.61        | 2.79        | 0.63        | <b>Agree</b> |
| 11.                 | It is easy to deploy and develop   | 2.83        | 0.69        | 2.80        | 0.75        | <b>Agree</b> |
| 12.                 | It improves physical and digital access to resources.  | 2.77        | 0.58        | 2.80        | 0.69        | <b>Agree</b> |
| 13.                 | It allows for easy access to information by students and teachers from their computers without the installation of a specific program. | 2.71        | 0.70        | 2.75        | 0.66        | <b>Agree</b> |
| 14.                 | It facilitates a collaborative learning.   | 2.85        | 0.67        | 2.75        | 0.68        | <b>Agree</b> |
| 15.                 | With the use of cloud computing, the cost of purchasing institutional software licenses for a limited number of computers.             | 2.88        | 0.66        | 2.51        | 0.70        | <b>Agree</b> |
| 16.                 | It provides powerful data processing and computing capacity for instructional delivery processes                                       | 2.75        | 0.56        | 2.51        | 0.61        | <b>Agree</b> |
| 17.                 | It offers one of the easiest way to create an environment where business educators, students and parents can stay on the same page.    | 2.63        | 0.65        | 2.87        | 0.65        | <b>Agree</b> |
| 18.                 | It backs up data in case of any physical or digital fault or failure.  | 2.65        | 0.85        | 2.58        | 0.64        | <b>Agree</b> |
| <b>Cluster Mean</b> |  | <b>2.79</b> | <b>0.66</b> | <b>2.76</b> | <b>0.70</b> | <b>Agree</b> |

The result on table 2 shows the mean ratings of business educators and students with regards to the benefits of using Cloud Computing in Business Education. The table shows that the respondents jointly agreed to all the items because their respective mean scores were above 2.50. Cluster mean for business educators had mean rating of 2.79 while cluster mean for students had mean rating of 2.76. These overall mean indicate that all the items were accepted as benefits of applying cloud computing in Business Education.

**Research Question 3:** What are the challenges of adopting Cloud Computing in Business Education?



**Table 3: Mean and Standard Deviation of the Respondents on the challenges of adopting Cloud Computing in Business Education?**

| S/N                 | Item Statements   | $\bar{X}_T$ | $SD_T$      | $\bar{X}_S$ | $SD_S$      | Remarks      |
|---------------------|---|-------------|-------------|-------------|-------------|--------------|
| 19                  | Cloud computing adoption is faced with severe privacy and data security threat.                                       | 2.92        | 0.77        | 2.83        | 0.75        | <b>Agree</b> |
| 20                  | Improperly secured cloud systems may be vulnerable to cyber-attacks.  | 2.96        | 0.69        | 2.90        | 0.79        | <b>Agree</b> |
| 21                  | Business Educators and students are ignorant of the benefits of Cloud computing to instructional delivery.            | 2.89        | 0.65        | 2.96        | 0.72        | <b>Agree</b> |
| 22                  | Migration of user data and service from one service provider to another is nearly impossible.                         | 2.76        | 0.72        | 2.96        | 0.77        | <b>Agree</b> |
| 23                  | Service outages or poor bandwidth experience by internet service provider can distract online instructional delivery. | 2.76        | 0.62        | 2.95        | 0.75        | <b>Agree</b> |
| 24                  | Lack of human resources technical knowhow.  | 2.83        | 0.60        | 2.86        | 0.56        | <b>Agree</b> |
| 25                  | Existing cloud infrastructures leverages commodity hardware can fail unexpectedly                                     | 2.62        | 0.96        | 3.05        | 1.07        | <b>Agree</b> |
| 26                  | Lack of well-defined service level agreement.   | 2.62        | 0.96        | 2.90        | 0.72        | <b>Agree</b> |
| 27                  | Scaling the storage systems as required is not possible in a cloud computing architecture.                            | 2.50        | 0.88        | 2.59        | 0.68        | <b>Agree</b> |
| 28                  | Cloud Computing observes severe performance instability during high load  | 2.85        | 1.34        | 2.90        | 0.97        | <b>Agree</b> |
| 29                  | A single user's illegal behaviour can affect the reputation of other users of the same cloud network.                 | 2.63        | 0.89        | 2.81        | 0.91        | <b>Agree</b> |
| 30                  | Cloud computing is not suitable for sending volume of data.   | 2.69        | 0.78        | 2.76        | 0.85        | <b>Agree</b> |
| <b>Cluster Mean</b> |   | <b>2.77</b> | <b>0.82</b> | <b>2.89</b> | <b>0.78</b> | <b>Agree</b> |

The result on table 3 shows the mean ratings of business educators and students with regard to the limitations of adopting Computing in Business Education. The table shows that the respondents jointly agreed to all the items because their mean scores were above 2.50. The cluster mean for Business educators was 2.77 while that of students was 2.89. These overall mean indicate that all the items were agreed upon by the respondents as challenges of adopting cloud computing in Business Education.



**Testing of the Null Hypotheses:**

**Ho<sub>1</sub>:** There is no significant difference between the mean ratings of Business educators and that of students on the areas in which Cloud Computing can be applied in Business Education.

**Table 4: Result of t-test Analysis of the Responses of Business educators and students on the areas in which Cloud Computing can be applied in Business Education**

| SN | Groups             | $\bar{X}$ | SD   | N   | Df  | t- cal | t-tab | Level of Sig | Rmk |
|----|--------------------|-----------|------|-----|-----|--------|-------|--------------|-----|
| 1. | Business Educators | 2.87      | 0.62 | 25  |     |        |       |              |     |
| 2. | Students           | 3.04      | 0.57 | 203 | 226 | 1.65   | 1.972 | 0.05         | NS  |

The t-test analysis presented in table 4 revealed that the t-calculated (t-cal) value of 1.65 is less than the t-table (t-tab) value of 1.972 at  $P \leq 0.05$  levels of significance and at 226 degree of freedom (df). This showed that, there is no significant difference in the mean responses of Business educators and students on the areas in which Cloud Computing can be applied in Business Education. Therefore, the null hypothesis of no significant difference is accepted and upheld.

**Null Hypothesis 2**

**Ho<sub>2</sub>:** There is no significant difference between the mean ratings of Business educators and that of students on the benefits of using Cloud Computing in Business Education.

**Table 5: Result of t-test Analysis of the Responses of Business educators and students on the benefits of using Cloud Computing in Business Education.**

| SN | Groups             | $\bar{X}$ | SD   | N   | Df  | t- cal | t-tab | Level of Sig | Rmk |
|----|--------------------|-----------|------|-----|-----|--------|-------|--------------|-----|
| 1. | Business Educators | 2.79      | 0.66 | 25  |     |        |       |              |     |
| 2. | Students           | 2.76      | 0.70 | 203 | 226 | 1.122  | 1.972 | 0.05         | NS  |

The t-test analysis presented in table 5 revealed that the t-calculated (t-cal) value of 1.122 is less than the t-table (t-tab) value of 1.972 at  $P \leq 0.05$  levels of significance and at 316 degree of freedom (df). This showed that, there is no significant difference in the mean ratings Business educators and students on the benefits of using Cloud Computing in Business Education. Therefore, the null hypothesis of no significant difference is accepted and upheld.

**Null Hypothesis 3**

**Ho<sub>3</sub>:** There is no significant difference between the mean ratings of Business educators and that of students on the limitations of adopting Cloud Computing in Business Education.

**Table 6: Result of t-test Analysis of the Responses of Business educators and education students on the limitations of adopting Computing in Business Education.**

| SN | Groups             | $\bar{X}$ | SD   | N   | Df  | t- cal | t-tab | Level of Sig | Rmk |
|----|--------------------|-----------|------|-----|-----|--------|-------|--------------|-----|
| 1. | Business Educators | 2.77      | 0.82 | 25  |     |        |       |              |     |
| 2. | Students           | 2.89      | 0.78 | 203 | 226 | 1.281  | 1.972 | 0.05         | NS  |

The t-test analysis presented in Table 7 revealed that the t-calculated (t-cal) value of 1.281 is less than the t-table (t-tab) value of 1.972 at  $P \leq 0.05$  levels of significance and at 226 degree of



freedom (df). This showed that, there is no significant difference in the mean ratings of Business educators and students on the limitations of adopting Cloud Computing in Business Education. Therefore, the null hypothesis of no significant difference is accepted and upheld.

### **Discussion of Findings**

The findings on the areas in which Cloud Computing can be applied in Business Education revealed that business educators and students jointly agreed to all the items identified. With a grand mean 2.87 and 3.04 and standard deviation of 0.62 and 0.57 respectively, it was therefore, indicated that Cloud Computing can be applied in Business Education. This finding is in line with Mehta (2016) who stated that in the forthcoming years education would be made easy, that anyone will be able to access education, using any kind of device, while being anywhere in the world.

The findings on the benefits of using Cloud Computing in Business Education revealed that business educators and students also jointly agreed to all the items identified. With a grand mean 2.79 and 2.76 and standard deviation of 0.66 and 0.70 respectively, it was therefore indicated that adoption of Cloud Computing in Business Education is beneficial. This is in line with Kurelovi, Rako and Tomljanovi (2013) who stated that Cloud computing ensures that trainers, staff, as well as students can access any form of information from anywhere, using any type of device. Thus, both private as well as public learning institutions can adopt this type of technology as a way of providing improved services using the few resources at their disposal.

The findings on the challenges of adopting Cloud Computing in Business Education revealed that business educators and students jointly agreed to all the items identified. With a grand mean of 2.77 and 2.89 and standard deviation of 0.82 and 0.78, it was therefore discovered that various challenges exist in adopting Cloud Computing in Business Education. This aligns with Mehta (2016) who stated that Cloud computing has some limitations which call for the introduction of a third party who is the platform provider hence the privacy and security of data is hard to maintain. Moreover, results of the three null hypotheses tested show that there was no significant difference between the mean ratings of Business Educators and that of the students in each case.

### **Conclusion**

Based on the findings of the study, it was concluded that Cloud computing be adopted in Business Education in the areas of content delivery and assessment, data management and administration, the principle of 4As, hosting Learning Management Systems (LMS), e-library facilities, collaboration and distance education as well as hosting virtual computing/accounting/word processing laboratories. This is because it creates a universal platform with simplified scalability and versatility. The benefits of cloud computing in Business Education include customized arrangement of educational services, cost-effectiveness, easy development and deployment, enhanced physical and digital access to diverse resources, enhanced collaboration, etc. However, the challenges include severe privacy and data security threats and cyber attacks/fraud, ignorance on the part of faculty and students, migration difficulties, service and power outages, inadequate technical skills, etc. Such challenges must be considered and adequately checkmated for effective use of Cloud Computing in Business Education.

### **Recommendations**

On the basis of the findings, discussions and conclusions of the study, the following recommendations are made:

1. Business educators and students should lend themselves more to enhanced media literacy and diverse digital skills through various training and re-training programmes and the use of reverse mentoring in order to benefit maximally from the various areas in which cloud computing can be applied such as online lectures, webmessaging, Database formation, Google Classroom, and so on.



2. The Government, Management of tertiary institutions, accreditation and supervisory bodies and other stakeholders should collaboratively enhance their commitment in ensuring that instructional delivery becomes more practical and less theoretical (a functional hybrid at least); as a replacement to the predominant use of traditional pedagogy with a view to enjoying the benefits of applying cloud computing in Business Education.
3. The Government at various levels and other stakeholders should endeavour to provide the much needed funds, facilities, power and alternative sources as well as top-notch digital resources and equipment to facilitate hands on practice of cloud computing by Business Educators and students, thereby ameliorating the inherent challenges.

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