



# Information Communication Technology and its Influence on Business Education Students Academic Performance in Delta State Tertiary Institutions

OKOGI, Anthony<sup>1</sup>, IGBERAHARHA, O. Clever<sup>2</sup>

Delta State University of Science and Technology<sup>1</sup>, Delta State University, Abraka<sup>2</sup>

Correspondence author: [tonydynastndidi@gmail.com](mailto:tonydynastndidi@gmail.com)

## ABSTRACT

This study examined Information and Communication Technology and its influence on Business Education students' performance among Delta State tertiary institutions. The study was guided by three research questions and three null hypotheses. The study adopted the descriptive survey on a population comprising of nine hundred and thirty-seven (937) respondents from the 2022/2023 academic session of the four (4) public tertiary institutions offering Business Education programme in the state. The sample size for the study was two hundred and ninety-six (296) undergraduate Business Education students. The instrument for data collection was the questionnaire. Data generated were analyzed using the Mean, Standard Deviation and the Pearson Product Moment Correlation Coefficient (PPMCC) for the research questions and formulated null hypotheses. Findings revealed amongst others that ICT facilities are available and at the disposal of Business Education students in Delta State tertiary institutions; that ICT facilities are being utilized by Business Education students in Delta State tertiary institutions; there is a significant correlation between the availability of ICT to Business Education student and its influence on their performance in Delta State tertiary institutions. The study concluded that if ICT is well embraced and sustained across all four Delta State public tertiary institutions sampled for this investigation, it will bring about better learning and enhanced performance; which by extension will facilitate the production of quality Business Education graduates who can be successful in the world of work. The study recommended amongst others that government should consistently make available information and communication technologies in Delta State tertiary institutions and revamp on a regular basis, the already existing ICT infrastructures, as this will help in the consistent use of the facilities for teaching and learning.

## KEYWORDS

Availability, Utilization, Competence, ICT.

## Introduction

Since tertiary education is seen to provide people with the skills and capacities needed to meaningfully contribute to social well-being, it is regarded as the cornerstone of national progress. In order to better support individual training within the educational system, it has recently assumed new dimensions. This is due to a paradigm change in pedagogy that replaced manual techniques with a system approach in education practice (Ojo, Kakulu & Gotip, 2022). These days, information and communication technology (ICT) is emphasized as the foundation for interaction, whether in the workplace or in the classroom. It is commonly known, according to Ojo et al. (2022), that ICT may be utilized to raise the standard of instruction and learning at any postsecondary institution, with the ultimate goal being the benefit of the students. He believed that human civilization has transitioned from the information technology age to the knowledge age due to the widespread use and quick growth of information and communication technology (ICT). Implicitly, ICT promotes the advancement of knowledge. This remark suggests that ICTs are becoming a basic aspect of human existence, and as a result, instructors and students must employ them in the classroom. Furthermore, because information and communication technology (ICT) will be heavily utilized by academic communities worldwide in the present and the future, lecturers must not only learn how to use ICT, but also become qualified and skilled in its use. This is to make sure students complete their daily chores and take part completely in the activities of a modern tertiary institution.

Information and communication technology (ICT) is viewed by Tsan, Totapally, Hailu, and Addom (2019) as a diverse use of satellite, computing, and communication technologies. The research of Inomiesa and Okoye (2005) from the standpoint of educational technology provides a further interpretation of the idea, implying instructional technology, educational media, audio-visual aids, and educational communication. They noted that ICT use in education is quickly gaining traction and is taught as a required subject in teacher education programs at postsecondary institutions throughout the globe. because it is focused on a variety of contemporary tools, resources, abilities, and frameworks that facilitate efficient teaching and learning. Based on the above notation, it can be seen that ICT is important in the educational system, especially because it improves understanding and service delivery's efficacy and efficiency. It is therefore impossible to overstate the importance of its availability and use. According to Amin-Dankwa (2018), communication is essential to modern business. They contended that the widespread usage of electronic data transmission in domains like education is making it the industry standard for transaction media. This concept is in line with Nigeria's national information technology and education policy. In 2013, the Federal Republic of Nigeria acknowledged the use of ICT in education. Furthermore, there are three specific goals that emphasize the use of information technology: integrating IT into the core of education and training; empowering youth with ICT skills and preparing them for global competitiveness; and establishing new, multifaceted IT institutions as centers of excellence to guarantee Nigeria's competitiveness in the global market.

Tata and McNamara (2018) state that the fifth strategy of the policy, which called for the restructuring of the educational system at all levels to effectively address the challenges and anticipated effects of the information age, must be implemented as soon as possible in order to meet these goals. This includes allocating a special IT development fund for education at all levels. This initiative aims to provide sufficient ICT infrastructure together with IT training for educators at all levels of education in Nigeria. Based on observations, many institutions are unable to claim to have a sufficient number of IT facilities available for usage by lecturers in their different administrative offices and school/classroom settings.

The majority of research, including those by Ahmed and Bakhiet (2021), Nyarko and Kozari (2021), and Tata and McNamara (2018), show that the failure of computer education brought into developing cultures is mostly due to the ineptitude of the teachers. According to research by Gambari and Chike-Okoli (2007), Arinze, Okonkwo and Iwunor (2012), and Omini and Esin (2019), teachers' motivation and capacity to utilize ICT and incorporate it into their lessons is mostly influenced by the professional development they have received. To put the policy on IT program in Nigeria into action, teacher preparation, ICT certification, and professional development are crucial. This is probably going to have an impact on how students see using the IT resources that are available at their different universities.

According to Ahmed and Bakhiet (2021), the foundation for implementing ICT projects in schools is improved quality education. They pointed out that ICT may improve teacher preparation, boost student enthusiasm and engagement, and facilitate the acquisition of fundamental skills. This idea suggests that having access to ICT resources will be beneficial for both instructors and pupils, hence this influence has to be evaluated. It's not without its inherent difficulties, though. According to Arinze et al. (2012), there are four main challenges: limited money, reluctance to change, skilled labor shortages, and inadequate infrastructure. They drew attention to the fact that Nigerian higher institutions lack the necessary ICT infrastructure to take advantage of the potential presented by the internet. Although most Nigerian higher schools have access to computers, students may not always have easy access to them due to the low computer-to-student ratio—which is typically estimated to be about 1 to 40.

Adelakun (2023) argues that having access to information and communication technology (ICT) in higher education institutions improves students' comprehension and retention skills when various ICT tools are used in the teaching process. Students' academic performance is greatly impacted by the ICT resources that are accessible and employed in education. These resources have both advantages and disadvantages, but overall, the advantages exceed the disadvantages.

Among the cutting edge technologies that are vital to human endeavor in all fields, information and communication technology is one of the most prominent. It has undergone a significant metamorphosis over time, changing how people live, study, work, and play while also making teaching and learning simpler and more pleasurable. As a result, the internet has become an essential tool for the current information society, and it is impossible to imagine life without it (Adelakun, 2023). Adelakun's claim supported the idea that ICT was essential for improving teaching and learning for students studying business in Delta State's postsecondary educational institutions.

Additionally, it is crucial to remember that when various ICT tools—such as graphics, animation, videos, and so on—are used in an engaging and comprehensive manner during the teaching and learning process, students' comprehension and retention abilities are improved. According to Adelakun (2022), there are a number of important advantages of ICT, such as fostering a carbon-free environment, making learning resources easier to distribute, improving student ICT proficiency and ICT literacy, enhancing retention, enhancing interactivity, making it simple to create study materials, enabling self-paced learning and personalization, encouraging student collaboration, offering quick and easy access to a wealth of learning resources, and encouraging active and independent learning. The implication is that, thanks to the many advantages of ICT, business education goals are met. Students' academic performance is improved when ICT is used in the teaching and learning process, and it also guarantees that graduates of the program are well-prepared for the workforce. Moreover, it is important to remember that unless ICT is utilized and applied properly, its availability alone will not be sufficient to meet and improve academic performance.

Tertiary institutions use a diverse set of ICT tools primarily for communication, creation, dissemination, storage, and management of information (Pedagoo, 2020), with the goal of bringing learning closer to the students and improving comprehension and performance. Information and communication technology also allows the use of new and innovative educational resources and the renewal of learning methods, establishing a more active collaboration of students and the simultaneous acquisition of technological knowledge. ICT has also become an essential part of the teaching-learning process in some contexts. Examples of these include the use of students' personal smartphones or other devices for learning during class, the replacement of chalkboards with interactive digital whiteboards, and the "flipped classroom" model, in which students watch lectures on their phones or computers at home and use class time for more interactive exercises. This model was used during the COVID-19 pandemic, when lecturing was essentially done. It is crucial to remember that when instructors in higher education are trained in ICT and have a strong digital literacy, they can help students develop higher order thinking skills, give them unique and innovative ways to communicate what they understand, and better prepare them for the constant technological change that occurs in both the workplace and society (Adelakun, Omolola & Adebola, 2022). All of these things contribute to the achievement of the objectives of business education.

Additionally, Ratheeswari (2018) demonstrates that the majority of the time, the fundamental ICT software required for practical tasks is unavailable, or if it is, it is inaccessible due to a low ratio. Moreover, Arinze et al. (2012) found that while internet connectivity is available in the majority of Nigerian tertiary institutions, the bandwidth subscribed to it, which determines access speed, is typically too small to support any meaningful academic activity during peak hours; consequently, there is a great deal of epileptic service that is previously abandoned by students who are supposed to benefit from it. Furthermore, Arinze et al. stated that certain universities have paid for subscriptions to virtual libraries, which allow users to access electronic academic resources like journals. They also mentioned that some universities, such as Delta State University, have collections of compact discs on particular subjects, but the accuracy of the information on the discs cannot be guaranteed because there is no attempt made to update them. Although most tertiary schools in Nigeria have ICT facilities, such as multimedia projectors, to facilitate teaching, learning, and research, these resources are rarely utilized because of logistical challenges and power outages. In light of this, academics are attempting to look at how information and communication technology affects the academic achievement of Business Education students in Delta State's postsecondary institutions.

### **Statement of Problem**

This study focuses on Information Communication Technology and its influence on Business Education students' performance in Delta State tertiary institutions. Most tertiary institutions in Nigeria have shown evidence in their increasing prominence for ICT utilization in improving the performance of students. For ages, there have been growing concerns about the deplorable poor performance of students, Business Education students to be precise in tertiary institutions. The success of an education system depends on the extent of which learners are transformed through its philosophy, hence the need for the employment of sophistication in the teaching learning process. The essence of this sophistry is to bring learning and academic activities closer to the students; as it seems that the level of availability and utilization of information and communication technologies in tertiary institution in Delta State is inadequate, thus impeding on students performance. A lot of researches have been conducted by different scholars in ICT and its influence on students' academic performance. Their findings reveal positive impact on students' academic performance when ICT is employed in the pedagogical process; thus, giving credence to this study.

In addition, the Federal Republic of Nigeria (2013) in her general objectives in three (XV, XVI and XXIV) of the 31 stated objectives of the national policy on education stressed that information technology must be used to amongst others empower the youth (students) with IT skills and prepare them for global competitiveness; integrate IT into the mainstream of education and training for enhanced performance; and establish new multifaceted IT institutions as centers of excellence to ensure Nigeria's competitiveness in international market. The extent to which this objective has been achieved with regards to performance of Business Education students requires review. Hence, the question this study attempts to answer is that: to what extent will the availability and utilization of ICT influences Business Education students' performance in Delta State tertiary institutions? However, specific research questions have been raised to guide this investigation as shown in the following section.

### Research Questions

The study was guided by the following research questions as stated below:

1. To what extent will the availability of ICT to Business Education students influence their performance in Delta State tertiary institutions?
2. To what extent will type of ICT utilized by Business Education students influence their performance in Delta State tertiary institutions?
3. To what extent will Business Education Students competence in ICT influence their performance in Delta State tertiary institutions?

### Hypotheses of the Study

The following null hypotheses were formulated and tested at 0.05 level of significance:

- i. There is no significant correlation between the availability of ICT to Business Education student and its influence on their performance in Delta State tertiary institutions.
- ii. There is no significant correlation between the type of ICT utilized by Business Education student and its influence on their performance in Delta State tertiary institutions.
- iii. There is no significant correlation between Business Education Students competence in ICT and its influence on their performance in Delta State tertiary institutions.

### Concept of Business Education

Business education is a branch of education that involves teaching the skills and operations of the business industry; and this field of education occurs at multiple levels, including secondary and tertiary education. In the view of Oroka, Atarere and Okifo (2020), they opined that Business Education is focused on equipping its recipients with necessary skills meant for self-reliance. The implication here is that, the Business Education programme ensures that recipient are able to be self employed after the acquisition of skills needed in the business world. It is a programme concerned with teaching the skills, attitudes and knowledge necessary for a successful career in office and business world. Furthermore, Business Education is seen as a plethora of courses designed to provide students with a number of skills needed for success in business, especially those related to launching and running businesses.

Business education programme is concerned with teaching the skills, attitudes and knowledge necessary for a successful career in office and business world. Anyaeneh and Nzegwu (2015) describe business education as education that enriches basic education for teaching career, entrepreneurship, business understanding, office understanding, office environment and vocational practices. In the



view of Onajite (2022), business education encompasses education programme for business, office occupation, economic understanding, entrepreneurship and it seeks to develop in the learners basic skills for personal use in the future. Schell (2003) as cited by Ibitoye (2011) opined that business education programme involves training students in topics relevant to the business world such as accounting and marketing. In addition, Schell states that business education involves training students in the softer skills such as leadership. The relevance of the course cannot be overemphasized.

In the view of Association of Business Educators of Nigeria (ABEN) as cited by Ezeabii (2017), it is needed by students in the contemporary world because it develops life skills for economic success and helps students to develop skills and attitudes needed for career success. It is pertinent to note that Business Education programme has evolved overtime and the modern business education, in comparison with the level that took place at the end of the twentieth century, already has a rather complex structure, which requires the development of various innovative forms of teaching and the development of expanded curricula. In addition, business education, taking into account the development of various programmes in the field of marketing, management, accounting, advertising is now a Truly interdisciplinary field, covering not only the "functional areas of business", but also economics, political science, sociology, law and other disciplines (Azevedo et al. 2012), employing technological devices, powered by the Internet in carrying out its operation in the process.

Igberaharha (2016) in his study on "Computer Assisted Instruction (CAI) in the learning of final accounts by Business Education students in Delta State tertiary institutions" sees Business Education as a systematic and organized programme of instruction aimed at transmitting recipients' business knowledge, skills, ideas, aptitude and technical know-how required for usage in business offices and for teaching others. The implication here is that the Business Education programme is a well thought out programme that helps to build students technical skills for daily operations. In his view, he believes that the availability and application of ICT/computers in the educational process offer the flexibility to adapt to different learning and teaching styles; noting that the world is in the age of supersonic technological advancement in education; suing for the need to organize learning experiences with the use of computer-based technology so as to meet with this advancement and enhance Business Education students performance in the school setting.

### **Availability of Information Communication Technology (ICT) and Students Academic Performance in Tertiary Institution**

Higher education institutes are renowned for their teaching and research. For education to be delivered effectively and efficiently, resources are essential. ICT tools, according to Fidelis and Onyango (2021), are tangible and useful resources. That the main access needed for using ICT in teaching and learning is physical technological access. Khan et al. (2015) share this belief that ICT provides chances for better education and boosts productivity. The impact of ICT model availability is a topic of ongoing discussion in Nigerian tertiary institutions across departments. For example, Krubu and Osawanu (2011) examined the impact of ICT availability in Nigerian university libraries. They noted that libraries today employ a variety of technologies to support the services they provide, as a result of the development of information and communication technology. This assertion backs up previous study by Tapera and Kujeke (2019), which showed that having access to ICT in tertiary institutions might improve instruction and research while also improving student performance.

Osarenren-Osaghae and Irabor (2012) established a connection between the availability and sufficiency of human and material resources and the teaching and learning of skill-based courses in

Nigerian tertiary institutions. They discovered that sufficient human and material resources are needed in order for the goals of Nigerian tertiary education, as stated in the National Policy on Education (FRN, 2013), to be successfully realized. They emphasized the necessity of making ICT tools, machines, and equipment accessible in order to teach highly qualified graduates, improve performance, and contribute to the growth of the country. The aforementioned observation suggests that in order for pupils to develop the abilities they need to operate well, the instructor must provide the tools they need to teach them. Schools' workshops and labs need to be well-stocked with working equipment in the proper quantity and caliber to improve student understanding and performance.

According to Ngeze (2017), most tertiary institutions' workshops and ICT labs are in such poor condition that they are unable to encourage students to receive any valuable training. Additionally, he pointed out that in schools with workshops, the purpose of having them is defeated since the equipment and materials are either nonexistent or insufficient to accommodate the number of pupils enrolled. It follows that inadequate ICT resources, including computers, internet access, and other necessities, might impede the advancement of skill-based courses like business education, ultimately impeding student performance. In light of this, Odusanya, as referenced in Fidelis and Onyango (2021), concluded that the majority of Nigerian postsecondary institutions focus more on theory-based instruction than on practical instruction. This is because students' performance is hampered in practical sessions since there is insufficient supply of ICT tools and equipment to go around the pupils. This viewpoint is consistent with the finding of Towe's (2007) study, which found that courses such as Business Education, which are meant to acquaint students with a variety of skill-based programs in the majority of Nigerian tertiary institutions and prepare them for life after graduation, show no signs of practical work. Furthermore, he disclosed that in instances where workshops and labs were accessible, they were bereft of necessary and operational tools, equipment, and supplies. As a result, theoretical and chalkboard-based programs that are meant to be practical are executed.

In most Nigerian higher institutions, the lack of use of ICT system techniques for teaching and learning appears to be caused by the detrimental effects of less ICT tools being available. On the other hand, Oloruntoyin (2013) noted that ICT might be included into the organization and management of Nigeria's postsecondary education. His research exposed the intricate administrative issues that educational institutions confront as a result of both a lack of knowledge and inadequate information management capabilities. Furthermore, his study emphasized how important it is for Nigerian educational institutions to stay current with the fundamentals of information communication systems in order to be relevant in the rapidly changing world of technology.

According to Nwankwo, who was quoted by Oyier, Odundo, Ganira, and Wangui (2015), information is essential to educational planning since it helps ensure that educational objectives are met. Therefore, the lack of ICT tools might hinder their use in the administration and planning of educational activities in tertiary institutions in Delta State, Nigeria, and elsewhere. This further implies that the majority of educational issues and student underperformance may be attributed to the lack of ICT equipment in most schools. Nevertheless, it is still undeniable that ICT is an invaluable resource for any educational system, and the fundamental tenet is that it must be fully utilized to serve the stated aims and objectives of both the school system and postsecondary education.

Empirical data indicates that educational establishments in Delta State, Nigeria, are still trailing behind in fully using ICT, especially the Internet's potential for growth and improvement in education. Oyier et al. (2015) highlighted Omekwu's observation that Nigerian educational institutions could not function without access to Internet-based resources, considering the Internet's nearly infinite

possibilities for research and education. Omekwu's insight implies that emerging nations, like Nigeria, must restructure their educational institutions to be based on information and communication technology. It is envisaged that this would result in the availability of ICT resources for use in Nigerian tertiary institutions.

According to Ukadike, as referenced by Fidelis and Onyango (2021), the following ICT resources are available for use as teaching tools in postsecondary education. These include, among other things, the following: transparencies, telephones/handsets, Internet access, computers, email, radio, television, tape recorders, video cassettes, CDs, overhead projectors, audio tape recorders, film strip projectors, slides, and transparencies. pointing out that utilizing any or all of these tools will improve student performance, support research methods, and increase teaching and learning efficiency and effectiveness.

### **Utilization of ICT and Students Academic Performance**

It goes without saying that studying with ICT gives students a fantastic chance to continue their education outside of the traditional classroom and into the comforts of their own homes or residence halls with their instructors. Thanks to information and communication technologies, the globe has become a global village. The information age in which we live has brought about significant changes to all human endeavors (Gbadegesin, Alabi & Omodun, 2018). This is essentially done to empower students' learning processes (Wagbara, 2019). Almost all human undertakings have seen a fundamental shift in techniques and procedures due to the introduction of ICT. ICT may be a helpful tool to aid in the learning and development of young children.

In a similar vein, instructors and lecturers can utilize ICT resources for instruction and learning without delving into technical specifics. In this sense, ICT refers to coordinated understanding of the different ICT technologies. It goes without saying that educators can use the many ICT tools to support learning without having to worry about the intricacies of the ICT infrastructure. In order to minimize incompetence in its implementation for academic purposes, it is mostly true that libraries throughout Africa, including Nigeria, are responding to changes, notably on innovations brought about by the application of ICT (Eslamian & Khademi, 2017).

### **Competence in the Use of ICT and Students' Academic Performance**

Since teachers, as noted by Amahi and Odigili (2021), serve as change agents and much of the responsibility for a successful integration of technology into daily teaching anchors on their prowess, the introduction of computer education into the school system may succeed to the extent that teachers' competencies in the use of the system approach to education will allow. This supports the idea that teachers' competencies in the use of ICT models, such as the computer, may determine the success of computer education in the Nigerian educational system. The Federal Republic of Nigeria (FRN, 2013) foresaw this trend and acknowledged the necessity for teachers to stay up to date on new developments that might affect them, their pupils, and the educational system in their national policy on education.

Therefore, Tisha-Faith et al. (2021) observed that ICT, a recent innovation in Nigerian education, has the potential to help teachers advance their careers; that teachers must have the necessary knowledge and skills to use ICT in the classroom; and that teachers must feel at ease and be well-prepared for using ICT tools in the classroom. This suggests that as ICT models support the teaching and learning process, their utilization is tied to the classroom. As a result, there is some



detriment to the learning outcome when the teacher's incompetence prevents this equipment from being used throughout the teaching process.

As a result of the aforementioned reality—that is, the application of ICT models for teacher competency and classroom learning—Basiri, Alandejani, and Almanadi (2018) noted that there is growing demand on educational institutions globally to include new ICTs. This pressure stems from the idea that ICT is crucial for changing how lessons are taught and learned in the classroom. The research by Infante-Moro, Infante-Moro, and Gallardo-Perez (2019) provides evidence in favor of the idea that ICT enhances learning by increasing access, fostering efficiency, and raising learning standards. This suggests that integrating ICT into postsecondary education has the potential to alter the way learning is done. Because students must interact with computers, Infante-Moro et al. claimed that using ICT increases students' awareness of how to learn. They also claimed that this has changed the relationship between students and lecturers by making it more intimate and open, which aligns the pedagogical process.

Nevertheless, it seems that even those educators who are proficient in using ICT do not include it into their lessons. According to Saimi and Yamat (2021), there are a variety of barriers preventing instructors at higher institutions from using ICT, such as a shortage of computers, teachers' lack of ICT expertise, and challenges integrating ICT into instruction. Therefore, the capacity to combine their manner of education will be implied by ICT competency. Saimi and Yamat also noted that the majority of Nigerian colleges are facing obstacles to ICT use, including a lack of enthusiasm or computer expertise among instructors, insufficient equipment, and inadequate skill sets. Vaske, Beaman, and Sponarski (2017) have pointed the finger at a shortage of instructors and other appropriately trained ICT workers as the cause of the issue. Furthermore, they noticed that the majority of tertiary institution instructors lack the necessary skills to effectively use and integrate ICTs into their lessons, and the majority of these professors had never been trained to use ICTs in the classroom. This information is also included in the research of Luque, Abdurrahman, and Prakosa (2020), who claimed that as the majority of these lecturers have not been trained using ICTs, they are unable to serve as role models for effective classroom technology use. The application and understanding of the Business Education curriculum and program in relation to ICT usage at tertiary institutions may be impacted by this low level of skills. In light of this, students' performance could be impacted by not being able to take use of the computer and other ICT resources that current teaching and learning practices require. Therefore, further research is needed to close the evident gap regarding the effect of ICT on students and the link between instructors' ICT abilities and students' learning. According to Chiedu, who was referenced by Kasemsap (2018), many Nigerian postsecondary graduates fail recruitment exams because they cannot turn on a personal computer (PC); some of these individuals are undoubtedly handling computers for the first time. This indicates that tertiary students have relatively low levels of computer education and ICT usage, which may have an impact on their performance and consequently affect how well-prepared most students are for the workforce.

Therefore, Kamaruddin, Abdullah, and Idris (2017) contended that many educational institutions have made virtual learning a reality and those postsecondary institutions are renowned for being important hubs for knowledge creation, acquisition, and discovery where people are trained for the workforce. Because both instructors' and students' pedagogy—which in turn affects performance—is influenced by their respective qualities and skills, the importance of both parties' roles in this regard cannot be overstated. According to Aziz and Rahman (2017), our educational system has an obligation to give graduates the knowledge and abilities needed to succeed in their chosen fields of study. Employers seek for graduates from schools that stress contemporary practices

and use cutting-edge technology in their courses. They recognized computer and information technology training as one of these backgrounds. Therefore, it appears that proficiency with the ICT model is a requirement for employment in the workforce.

Studies have not stopped emphasizing how important it is for pupils to understand technology in the present world. The authors Ashraf, Iqbal, Arif, and Asghar (2022) highlight the necessity of equipping aspiring employees, or students studying business education, with the necessary skills. They point out that the advancement of the employment climate in the coming decade calls for educational programs that impart job skills, entrepreneurial skills, analytical, collaborative, and problem-solving abilities - all of which are ingrained in the objectives of business education. The notation has made it clear that students need to be adequately prepared to face the challenges of the use of ICT tools as a lifelong learning; and this preparation needs to start with their school performance in the course by employing the paraphernalia of ICT in the process.

Over the past 20 years, a large body of scholarship has examined the relationship between students' performance and the usage of information and communication technology (ICT). Numerous research, such as Luque et al.'s (2020) study, have attempted to elucidate the function and added value of these technologies in classrooms and on students' academic performance. Their investigation of the impact of computer use on students' performance was the main focus of their study. These days, examining the relationship between ICT and academic achievement appears to be misinterpreting the function and makeup of these tools. In actuality, because ICT is general purpose technology, it must be described in order to satisfy student demands and be tailored to the limitations and local environment (Ashraf et al. 2022). Ashraf et al. pointed out that a range of usage models may be found that provide the same results, adding that ICT opens up new opportunities for learning processes that are location- and space-independent. According to their observations, despite the numerous environmental and societal influences, ICT offers new ways of providing higher education instruction to both male and female students in their diverse locations. It also permits more flexible (asynchronous) and personalized learning.

### **Influence of ICT on Business Education Students' Academic Performance**

ICT has an impact on education, which has surely an impact on research, teaching, and learning. According to Mezieobi (2017), ICT has the ability to enhance and develop abilities to inspire and engage students, to assist connect learning experiences to real-world situations, and to support teachers in enhancing their pedagogical approaches. ICT, in accordance with Ajisegiri (2013), expands the flexibility of education delivery, enabling students to access knowledge at any time and from any location. It affects how teachers teach and how students learn, which helps to raise learning standards and better prepare kids for a lifetime of learning. Students can peruse e-books, practice test papers, and have quick access to mentors, experts, researchers, professionals, and peers worldwide with the use of information and communication technology. Due to this flexibility, more learners who were previously limited by other obligations have access to just-in-time learning chances and learning possibilities overall (Mhlana & Krauss, 2017).

ICT may break down obstacles to communication including time and geography, according to Khan et al. (2015). They went on to say that ICT also makes it possible to create online resources like digital libraries, which provide professionals, instructors, and students access to course materials and research materials at any time and from any location. ICT supports the development of complex thinking abilities in students and deepens their topic knowledge and involvement in knowledge building (Falobi, 2014). According to Ajisegiri (2013), ICT can improve education's relevance and

quality while also expanding access to it. Change in this area is sparked by the ICT's application in educational settings alone. According to Ahmed and Bakhiet (2021), some of the reasons ICT is important in education are as follows: it makes research and information sharing possible online; it creates job opportunities, particularly for graduates; it improves peer interaction on educational issues; it makes learning more engaging, especially when it comes to abstract concepts; and it provides educational information (which includes open and distance learning). Every day, students at postsecondary institutions utilize ICT to help with their academics. In the context of students using computers for academic purposes on a regular basis, blended learning environments yield higher student success rates and more effective and efficient learning outcomes. This gives students a wide range of material to get information to help them study (Ajisegiri, 2013), when the means for doing so is readily available to be exploited.

One of the biggest obstacles to students' ICT usage appears to be the absence or inadequacy of IT facilities. While a variety of studies have described students' perspectives as crucial relevant variables to assess ICT usage, the analysis of ICT usage rely solely on sufficient ICT facilities (Ullah et al. 2019). ICT infrastructure was shown to be crucial to the operation of multi-media classrooms (Ajisegiri, 2013). Though technology may be used for a variety of objectives, students do not necessarily use ICT for academic purposes. Students may utilize ICT, for example, to create materials for class or for personal use (Ullah et al. 2019). The use of ICT in higher education and its impact on student throughput have not shown to be perfect thus far; rather, prior research has produced inconsistent findings. Prior studies have not been able to provide a rational understanding of the impact of ICT sequence on students' achievement. First off, some research was unable to demonstrate a true impact of ICT on university students' academic performance. There is extremely little empirical evidence about the impact and effectiveness of ICTs on university students' academic performance anywhere in the globe (Ajokpaniovo & Awoyemi, 2020).

## Methodology

This study adopted a descriptive survey research design. This design was considered appropriate and suitable as explained by Okorodudu (2013). It involved systematic collection of data about a given population or area of interest, group of persons, institutions, number of objects, method, and materials or class of events, in order to describe, compare, contrast, and interpret the existing phenomena or answering questions concerning the current status of the phenomena. The population of this study consisted of 937 undergraduate Business Education students in the 2022/2023 academic session from four (4) tertiary institutions with functioning Business Education programme in Delta State. The institutions are the two Colleges of Education in Warri (affiliate programme inclusive) with Business Education students population of 242 and Delta State College of Education, Mosogor (affiliate programme inclusive) with a population of 233; while on the other hand, two universities, that is, the Delta State University, Abraka with a population of 378 Business Education students and University of Delta, Agbor (affiliate programme inclusive) with a population of 84, giving a total population for the investigation as 937 students respectively. The sample of this study consisted of 296 undergraduate Business Education students that were selected from each tertiary institution offering Business Education programme in Delta State. The sample was drawn using the simple random sampling technique. The instruments that was employed for the purpose of data collection was the questionnaire. It was titled: Availability and Utilization of Information Communication Technology and its Influence on Business Education Students of Tertiary Institution Questionnaire (AUICTIBESTIQ). The reliability of the instrument was determined by the Cronbach Alpha approach which gave rise to an index of 0.89. Data generated were analyzed using the Mean and Standard

Deviation statistics to answer the stated research questions; while the Pearson Product Moment Correlation Coefficient (PPMCC) was used to test the formulated null hypotheses at an alpha of 0.05 level of significance.

## Results

**Research Question One:** To what extent will the availability of ICT to Business Education students influence their performance in Delta State tertiary institution? This question sought to find out if the availability of ICT facilities at students' disposal will influence their performance. Result is presented in Table 1

**Table 1: Mean ( $\bar{X}$ ) and Standard Deviation on Influence of Availability of ICT in Delta State Tertiary Institutions**

s/n	Items	N	$\bar{X}$	St.D	Decision
1.	I have Internet access in my institution for doing my academic work	296	3.33	0.82	Accepted
2.	I have computers for learning and browsing in my institution	296	3.20	0.86	Accepted
3.	I have access to CD-ROM, Television, Radio, Tape Recorder, Video tape for learning in my institution	296	3.02	0.84	Accepted
4.	My school have overhead projector, film strip projector, power point devices, slides in my institution for teaching and learning	296	3.32	0.83	Accepted
5.	My school do not encourage the use of ICT facilities	296	3.65	0.64	Accepted

Table 1 showed that respondents agreed to all the items measuring the influence of availability of ICT in Delta State tertiary institutions. This reflected in the high mean score which are all above the 2.50 benchmark. Inferred here is that the availability of ICT facilities influences Business Education students' performance in Delta State tertiary institutions.

**Research Question Two:** To what extent will type of ICT utilized by Business Education students influence their performance in Delta State tertiary institutions? Result is presented in Table 2.

**Table 2: Mean ( $\bar{X}$ ) and Standard Deviation on the Influence of Type of ICT Utilized in Delta State Tertiary Institutions**

s/n	Items	N	$\bar{X}$	St.D	Decision
1.	I use ICT to browse for material in the Internet to improve my comprehension and performance in Business Education	296	3.23	0.92	Accepted
2.	Teaching in Business Education in my institution is done using the public address system which ensure that issue of not hearing is defeated and comprehension easy	296	3.42	0.69	Accepted
3.	ICT facilities are employed regularly in the teaching of practical courses and My ability to use ICT has made me able to assist my colleagues when they face problems in using ICT	296	3.35	0.72	Accepted
4.	I abhor the use of ICT for learning as it is too complicated	296	3.50	0.65	Accepted
5.	With my knowledge in ICT sourcing for information is no longer as difficult as before	296	3.32	0.82	Accepted

Table 2 showed that respondents agreed to all the items measuring the influence of type of ICT utilized in Delta State tertiary institutions with mean scores above the 2.50 benchmark. The implication here is that Business Education students utilized the various types of ICT facilities with a view to enhancing their performance.

**Research Question Three:** To what extent will Business Education students' competence in ICT influence their performance in Delta State tertiary institutions? This question sought to find out how the competence of Business Education students in ICT influences their performance. Result is presented in Table 3

**Table 3: Mean ( $\bar{x}$ ) and Standard Deviation on Business Education Students Competence in ICT in Delta State Tertiary Institutions**

s/n	Items	N	$\bar{x}$	St.D	Decision
1.	I exercise a high level of competence in the use of ICT facilities for my learning	296	2.87	0.90	Accepted
2.	I can use different operating system for the purpose of learning in Business Education	296	3.07	0.93	Accepted
3.	I can design effective learning experiences and create rich learning environments with the support of ICT	296	3.22	0.87	Accepted
4.	I cannot demonstrate knowledge and skills for acquiring and processing learning resources with technology tools and using the resources for educational purposes	296	3.47	0.72	Accepted
5.	I use the social media to get updates on my academic field of study – Business Education	296	3.53	0.72	Accepted

Table 3 showed that respondents agreed to the various items measuring Business Education students' competence in ICT as reflected in the high mean score and standard deviation which is above the stipulated benchmark of 2.50. The implication here is that Business Education students' competence in ICT, to a large extent influences their performance.

**Hypothesis One:** There is no significant correlation between the availability of ICT to Business Education students and its influence on their performance in Delta State tertiary institutions. Results is presented in Table 4.

**Table 4: Pearson r Analysis of Correlation between Availability of ICT and Business Education Students' Performance**

Variables of the study	N	df	$\bar{x}$	SD	Cal. r	Crit. r	Alpha	Rmk
Availability of ICT facilities	296	294	3.30	0.80	0.80	.195	0.05	Rejected (significant)
Business Education Students Performance								

N =296, df =294, P≤0.05 level of significance

The results presented on Table 4 indicates that N=296, df =294, Mean =3.30, cal r=0.80, crit r = .195 and alpha =0.05 level of significance. The fact that calculated r of 0.80 is greater than the



critical r of .195 at an alpha of 0.05 shows the null hypothesis is rejected, indicating that there is a significant correlation between the availability of ICT facilities and Business Education student’s performance in Delta State tertiary institutions.

**Hypothesis Two:** There is no significant correlation between the type of ICT utilized by Business Education students and its influence on their performance in Delta State tertiary institutions. Result is presented in Table 5.

**Table 5: Pearson r Analysis of Correlation between Type of ICT Utilized and Business Education Students’ Performance**

Variables of the study	N	df	$\bar{X}$	SD	Cal. r	Crit. r	Alpha	Rmk
Type of ICT Utilized								
Business Education Students Performance	296	294	3.36	0.76	.104	.195	0.05	Rejected (significant)

N =296, df =294, P≤0.05 level of significance

The presented data on Table 5 indicates that the cal r of .104 is greater than the crit. r of .195 at an alpha of 0.05 level of significance. It means that the null hypothesis is rejected, showing that there is a significant positive correlation between the type of ICT utilized and Business Education students performance in Delta State tertiary institutions.

**Hypothesis Three:** There is no significant correlation between Business Education students’ competence in ICT and its influence on their performance in Delta State tertiary institutions. Result is presented in Table 6.

**Table 6: Pearson r Analysis between Competence in ICT and Business Education Students’ Performance**

Variables of the study	N	df	$\bar{X}$	SD	Cal. r	Crit. r	Alpha	Rmk
Competence in ICT Usage								
Business Education Students Performance	296	294	3.23	0.83	0.89	.195	0.05	Rejected (significant)

Table 6 presents the following results, where N=296, df =294, Mean =3.23, SD =0.83, cal. r =0.84, crit. r =.195 and alpha =0.05 level of significance. The result shows that the cal r. of 0.89 is greater than the crit r of .195 at an alpha of 0.05 level of significance. Based on this, it is safe to reject the null hypothesis. It implies that there is a positive correlation between competence in ICT and Business Education students’ performance in Delta State tertiary institutions.

## Discussion of Findings

The results of the first hypothesis showed a strong relationship between students' performance at Delta State's postsecondary institutions and their access to ICT for business education. This result is consistent with research by Ishaq et al. (2020), who examined the effect of ICT on students' performance and found that students use it extensively to enhance their learning and complete their coursework. They said that there is a significant correlation between students' performance and the availability and effective usage of ICT. Their research suggests that having access to ICT tends to encourage learning. The results of the current study on use also agreed with the findings of Eslamian and Khademi (2017), who discovered that students' achievement is significantly impacted by the availability of ICT for learning. Furthermore, the present investigation was consistent with Ahlan et al.'s (2020) results. The study looks at how ICT improves tertiary students' performance. The availability, ownership, and usage of ICT were found to be correlated with students' academic achievement. Ahlan et al. also pointed out that having access to ICT helps institutions improve e-learning, which boosts productivity.

The results of the second hypothesis showed a strong relationship between the kind of ICT that students studying business education use and how it affects their academic achievement at Delta State universities. This result was consistent with Ullah et al.'s (2019) study on the effects of ICT. They discovered that there is a beneficial relationship between students' academic achievement and the kind of ICT utilized for teaching and learning. This suggests that there is a favorable relationship between the kind of ICT used and pupils' academic achievement. In a similar line, Osagie et al.'s (2019) study on the impact of ICT on students' academic performance discovered that there are differences in academic activities between those who use and do not use ICT facilities, supporting the idea that ICT usage and student performance are related. Additionally, the current study is consistent with the findings of Ojo et al. (2022), who looked at how ICT use affected students' academic performance and discovered that it had a major impact. This suggests a relationship between student performance and the kind of ICT employed. In addition, the current study is in agreement with the work of Adaobi (2023) who discovered that the use of information and communication technology influences students' academic performance.

The results of hypothesis three showed a strong relationship between business education students' ICT proficiency and how it affects their academic success at Delta State's postsecondary institutions. This result was consistent with a research by Phoebe et al. (2022), which found that when information and communication technology proficiency is used in the teaching process, it can prompt and improve students' exam scores. This suggests that ICT capabilities serve as a conduit for improving students' success in business education. The results of the current study also supported the findings of Suleiman et al. (2019), who observed that students who possess digital skills are highly functional and engaged in the learning process, which spirals their performance. They are suing for more robust competency-based education that is focused on helping students become more competent, particularly in ICT. Thirdly, this result was consistent with the findings of Ashraf et al. (2022), who found that students' ICT proficiency moderated their academic performance. The idea that pupils' ICT proficiency expands and improves their educational opportunities is implied here.

## Conclusion

In this study, the importance of ICT for postsecondary education has been emphasized. The study's conclusions suggest that Delta State's postsecondary institutions' access to and use of ICT may have a beneficial impact on the performance of their business education students. According to the study's findings, ICT can improve learning and performance at all four Delta State postsecondary institutions if it is properly implemented and maintained. This, in turn, can help produce high-caliber business education graduates who can succeed in the workforce. However, there have been certain issues with ICT availability and use, which, if left unaddressed, might negatively impact students' predicted success in Delta State's postsecondary institutions.

## Recommendations

Arising from the conclusion, the following recommendations are hereby made:

- i. Government consistently make available Information and Communication Technologies in Delta State tertiary institutions and revamp on a regular basis the already existing ICT infrastructures as this will help in the consistent use of the facilities for learning;
- ii. Agencies like Tertiary Education Trust Fund (TETFUND) and National Economic Empowerment Development Strategies (NEEDS) that finances tertiary education should lay more emphasis on e-learning in their allocation of projects to institutions as this will ensure that school authorities and students maximizes the potential of ICT in the pedagogical process.
- iii. Resource persons on information and communication technology should be sourced to provide training to both staff and students on a consistent basis with a view to reaping the potentials of the usage of ICT in education

## REFERENCES

- Adaobi, F (2023). *Perceived influence of information and communication technology (ICT) on academic performance of secondary school students in social studies in Umuahia Education Zone*. Repository.mouau.edu.ng: Retrieved April 10, 2023, from <https://repository.mouau.edu.ng>
- Adelakun, N. O. (2022). Impact of digital technology and the need for periodical review of educational curriculum in Nigeria tertiary institutions. *IKSP Journal of Computer Science and Engineering*, 2(1), 14–19. <https://doi.org/https://doi.org/10.5281/zenodo.6028709>
- Adelakun, N. O. (2023). *Impact of information and communication technology on students' academic performance*. Retrieved 6<sup>th</sup> April, 2023 from <https://informationmatters.org>
- Adelakun, N. O., Omolola, S. A. & Adebola, M. S. (2022). Empirical study on electronic learning system: benefits, challenges and prospects. *International Journal of Science Education and Cultural Studies*, 1(2), 109–119. <https://doi.org/10.58291/ijsecs.v1n2.58>
- Ahlan, A., Atanda, B. N. & Shehu, Y. I. (2020). Information technology enhances students' academic performance: A case of university of Ilorin. *The Online Journal of Distance Education and e-Learning* 2(2), 5-10
- Ahmed, Z. A. R. E. H & Bakhiet, S. F. A. (2021). The availability and use of information and communication technology at gifted primary schools in the Sudan. *International Journal of Innovation, Creativity and Change*, 15(5), 816-846
- Ajisehiri, F. (2013). *Influence of information and communication technology (ICT) on performance in English language among secondary school students in Ilorin metropolis*. [Unpublished B.Ed. project], University of Ilorin, Ilorin, Nigeria.
- Ajokpaniowo, M. & Awoyemi, A. O. (2020). Perceived influence of information and communication technology on students' academic performance in University of Ilorin, Kwara State. *Al-Hikmah Journal of Educational Management and Counselling*, 2 (2), 84-91
- Amahi, F. U, & Odigili, B. C., (2021). Evaluating instructional facilities in teaching and learning business education courses. *Nigeria Journal of business education* 8(1), 229-234.
- Anim-Dankwa, W. (2018). *Socio-economic determinants of ICT usage among rural crop farmers in the Northern Region of Ghana*. [Masters' Thesis], University of Development Studies. Tamale, Ghana. Available at: <http://www.udsspace.uds.edu>.
- Anyaneh, V. K. & Nzegwu, R. C. (2015). The role of business education in realization of sustainable development in Nigeria beyond 2020. *Knowledge Review*, 33 (3), 1-6.
- Arinze, F. O., Okonkwo, E. N. & Iwunor, A. N. (2012). Information and communication technology (ICT) application in secondary schools and students' academic performance in social studies. *An International Multidisciplinary Journal, Ethiopia*, 6(4), 266-278
- Ashraf, M.A., Iqbal, J., Arif, M.I & Asghar, M.Z (2022). Fostering ICT competencies in blended learning: Role of curriculum content, material, and teaching strategies. *Front. Psychol.* 13, 758016. doi: 10.3389/fpsyg.2022.758016

- Azevedo, A., Apfelthaler, G., & Hurst, D. (2012). Competency development in business graduates: An industry-driven approach for examining the alignment of undergraduate business education with industry requirements. *The International Journal of Management Education*, 10(1), 12-28.
- Aziz, N. S., & Rahman, N. (2017). Use of ICT in indigenous primary school classroom: A case study of teachers' expectations and experiences. In *2017 International Conference on Research and Innovation in Information Systems (ICRIIS)* (pp. 1-4). IEEE.
- Basiri, W. S., Alandejani, J. A. & Almanadi, F. M. (2018). "ICT adoption impact on students' academic performance: Evidence from Saudi universities", Education Research International, Saudi Arabia.
- Eslamian, D., & Khademi, B. (2017). Effect of information and communication technologies on academic achievement of high school students in Neyriz. *American Journal of Humanities and Social Sciences*. 5(2), 11-16.
- Ezeabii, I. C. (2017). Entrepreneurial planning and organizational skills needed by business education students in public universities in south east states of Nigeria for self-employment. *Nigerian Journal of Business Education (NIGJBED)*, 4(2), 216-226
- Falobi, O. V. (2014). An investigation into the impact of ICT on commercial students' academic performance in public schools in Lagos State. *Journal of Association of Business Educators of Nigeria*, 1(1), 48-154.
- Fidelis, & Onyango, D. O. (2021). Availability of ICT facilities and teachers' competence in the use of ICT among public secondary schools in Ngara District, Tanzania. *East African Journal of Education and Social Sciences*, 2(2), 34-40
- Gambari, A. I. & Chike-Okoli, A. (2007). Availability and utilization of information and communication technology (ICT) facilities in higher institutions In Niger State, Nigeria. *International Journal of Information and Communication Technology*, 4(1), 34-46
- Gbadegesin, T. F., Alabi, O. and Omodun, K. (2018). Children education in ICT age in Nigeria: A tripartite socio-cultural phenomenon. *Journal of Education and Social Research*, 8(3), 51-71.
- Ibitoye, O. (2011). Reforming the contents of business education programmes to meet the self-employment policy of Nigerian government. *The Journal of Nigerian Association of Teachers of Technology*, 7 (4), 74-77.
- Igberaharha, O. C. (2016). Computer assisted instruction (CAI) in the learning of final accounts by business education students in Delta State tertiary institutions. *Delsu Journal of Educational Research and Development*, 15(1), 161-170
- Infante-Moro, A., Infante-Moro, J., & Gallardo-Pérez, J. (2019). The importance of ICTs for students as a competence for their future professional performance: The case of the faculty of business studies and tourism of the University of Huelva. *Journal of New Approaches in Educational Research*, 8(2), 201-213. doi: 10.7821/naer.2019.7.434
- Inomiesa, E.A. & Okoye, N.S. (2005). *The basics of educational technology for tertiary institutions*. Author House Publishers. Bloomington, Indiana, USA
- Ishaq, K., Zin, N. A. M., Rosdi, F., Abid, A. & Ijaz, M. (2020). The Impact of ICT on students' academic performance in public private sector universities of Pakistan. *International Journal of Innovative Technology and Exploring Engineering (IJITEE)* 9(3), 1117-1121



- Kamaruddin, K., Abdullah, C. A. C., & Idris, M. N. (2017). Integrating ICT in teaching and learning: A preliminary study on Malaysian private preschool. *International Journal of Academic Research in Business and Social Sciences*, 7(11), 1236-1248.
- Kasemsap, K. (2018). Encouraging digital literacy and ICT competency in the information age In *Encyclopedia of Information Science and Technology, Fourth Edition* 2253-2263.
- Khan, S. M., Khan, I., Din, S., Ismail, M.H., Khattak, R., & Jan, R. (2015). The Impacts of ICT on the Students' Performance: A Review of Access to Information. *Research on Humanities and Social Sciences*, ISSN 2224- 5766. Retrieved from [www.iiste.org](http://www.iiste.org).
- Krubu, D. E. & Osawaru, K. E. (2011). *The impact of information and communication technology (ICT) in Nigerian University libraries*. Retrieved 15/03/2023 from <http://www.webpages.uidaho.edu>.
- Luque, J., Abdurrahman, S. F., & Prakosa, P. W. B. (2020). *Competency standards as a tool for human capital development: Assessment of their development and introduction into TVET and certification in Indonesia* 1-64.
- Mezieobi, S. A. (2017). ICT utilization for social studies delivery in secondary schools in Nigeria. *International Journal of Research in Humanities, Arts and Literature*, 5(3), 71-78. <https://oaji.net>
- Mhlana, S. & Krauss, K. (2017). *The impact of information and communication technology in education: Gender issues*. 978-1-5386-0514-1/17/31.00 ©2017 IEEE
- Nyarko, D. A & Kozári, J. (2021). Information and communication technologies (ICTs) usage among agricultural extension officers and its impact on extension delivery in Ghana. *Journal of the Saudi Society of Agricultural Sciences* 20, 164–172
- Ojo, M. O., Kakulu, O. E. & Gotip, N. W. (2022). Influence of information and communication technologies on students' academic performance in Veritas University, Abuja. *Igwebuike: An African Journal of Arts and Humanities*, 8(2), 33-50
- Okorodudu, R. I. (2013). *Research method and statistics: A practical approach*. Abraka: University Printing Press
- Oloruntoyin, S. T. (2013). *Integrating information and communication technology in the planning and administration of tertiary education in Nigeria*. Retrieved 16/03/2023 from <http://www.ictdoeafrica.org>.
- Omini, E. U. & Esin, J. E. (2019). Utilization of information and communication technology (ICT) and library operations in state university libraries in south-south Nigeria. *Global Journal of Educational Research*, 18, 47-56
- Onajite, G. O. (2022) Teaching strategies employed by teachers for improving students' learning in business education in secondary schools in Delta State, *British Journal of Education*, 10(3), 85-100
- Oroka, O. V., Atarere, L. O. I. & Okifo, J. (2020). Reinventing business education through quality and information communication technology (ICT) for global competitiveness among selected universities in south-south and south-east Nigeria. *International Journal of Innovative Information Systems and Technology Research* 8(4), 32-43.

- Osagie, M. S. U., Ajayi, D. E., Okoye, O., Faith, E. O., Anwuli, E., Osian, E., Osarobomwen, F. O. & Makpor, S. O. & Josiah, E. V. E. (2019). The role of information and communication technology (ICT) in the academic performance of the university of Benin post graduate students. *Asian Journal of Probability and Statistics*, 5(2), 1-9
- Osarenren-Osaghae, R. I. & Irabor, Q. O. (2012). *Availability and adequacy of human and material resources for the teaching and learning of skill-based courses in Nigerian public universities*. Retrieved 15/03/2023 from <http://www.krepublishers.com>.
- Oyier, C.R., Odundo, P.A., Ganira, L., & Wangui, L. (2015). Effects of ICT integration in management of Private Secondary Schools in Nairobi Country, Kenya: Policy options and Practices. *World Journal of Education* 5, (6), 213-219.
- Pedagoo. (2020). *What are the uses of ICT in education?* Media Interactiva Group. <https://pedagoo.com/uses-of-ict-in-education>
- Phoebe, N. A., Paran, L. P. T., Manzano, R. D. & Daran, A. M. (2022). ICT competence and capabilities in the performance of junior high school English teachers in Santa Cruz Laguna. *IJRP*, 102(1), 268-282 doi:10.47119/IJRP1001021620223259
- Ratheeswari, K. (2018). Information communication technology in education. *Journal of Applied and Advanced Research*, 3, 45–47. <https://doi.org/https://dx.doi.org/10.21839/jaar.2018.v3S1.169>
- Saimi, N. & Yamat, H. (2021). Factors influencing ICT competency skills among ESL primary school teachers. *International Journal of Academic Research in Business and Social Sciences*, 10(1), 220-236.
- Suleiman, Y., Ivey, T., Bolaji, H. O. & Makinde, S. O. (2019). Promoting digital competence in Spanish secondary schools: Indicator for academic performance improvement. *Journal of Library Science Education*, 1(1), 128-140
- Tapera, M., & Kujeke, C. (2019). Information and communication technology (ICT) challenges in teaching chemistry. A case study of Zimbabwean Polytechnics. *International Journal of Advanced Research and Innovative Ideas in Education*, 5 (1), 2395- 4396.
- Tata, J.S. & McNamara, P.E. (2018). Impact of ICT on agricultural extension services delivery: evidence from the Catholic Relief Services SMART skills and Farmbook project in Kenya. *J. Agric. Edu. Exten*, 24, 89–110. <https://doi.org/10.1080/1389224X.2017.1387160>.
- Tisha, F. S. S., Larsen, W. B., Falcoto, J. K. M., Espaldon, S. E., Marianne, G. M., Christel, C. L., Steven, J. L., Ramos, J. C. & Christopher, D. C. F. (2021). Effects of students' ICT competencies on their research capabilities and productivity. *International Journal of Academic Multidisciplinary Research (IJAMR)*, 5(1), 55-59. ISSN: 2643-9670
- Towe, L. A. (2007). *Power and national development*. Ibadan: Evans brothers.
- Tsan, M., Totapally, S., Hailu, M. & Addom. B., (2019). *The digitalisation of African agriculture report*. Technical centre for agricultural and rural cooperation (CTA) publication. Wageningen, Netherlands. <https://www.cta.int/en/digitalisation>
- Ukadike, J. O. (2004). *Institutional materials in social studies education*. Onitsha. Lincel publishers.
- Ullah, M. A., Alam, M. M., Shan-A-Alahi, A., Rahman, M. M., Masum, A. K M. & Akter, N. (2019). Impact of ICT on students' academic performance: Applying association rule mining and structured equation

modeling. (*IJACSA International Journal of Advanced Computer Science and Applications*,10 (8), 387-393

Vaske, J. J., Beaman, J., & Sponarski, C. C. (2017). Rethinking internal consistency in Cronbach's Alpha. *Leisure Sciences* 39(2), 167-173.

Wagbara (2019). Managing computers in teaching and administration in kindergartens. *Computers in NZ Schools*, 12 (1), 21-32