International Journal of Social Science and Education Research Studies

ISSN(print): 2770-2782, ISSN(online): 2770-2790

Volume 06 Issue 02 February 2026

DOI: https://doi.org/10.55677/ijssers/V06I02Y2026-04, Impact Factor: 7.573

Page No : 138-145

Effectiveness and Regularity of the Use of Information and Communication Technology (ICT) Among Business Education Students at Delta State Tertiary Institutions

Nsima Joseph Ekone[1], Patience Ewomaoghene Okoro[2]

[1,2] Delta State University, Abraka, Nigeria

ABSTRACT

This study examined the effectiveness and regularity of ICT usage among business education students in Delta State tertiary institutions. Five research questions were raised and answered, while five null hypotheses were formulated and tested at a 0.05 level of significance. The descriptive survey design was adopted for the study. The study population comprised 578 business education students. Simple random sampling was used, with a sample size of 174. The instrument used was a structured questionnaire and was validated by three experts. The test-retest method was used in testing the reliability of the instrument, and a reliability coefficient of 0.78 was obtained. Data collected from the respondents were analysed using Mean, Standard Deviation, t-test statistics, and Analysis of Variance (ANOVA). The study found that business education students frequently use ICT tools for academic activities in tertiary institutions in Delta State. Additionally, personal, institutional, and environmental factors influence the frequency and quality of ICT use among Business Education students in Delta State tertiary institutions, among others. It was concluded that ICT usage has impact on academic performance and professional development of Business Education students in Delta State tertiary institutions to a high extent. It was recommended among others that Management of tertiary institutions should encourage their students to acquire their personal mobile devices such as android phones, hi-phones among others that they will use specifically for academic purposes.

Published Online: February 11, 2026

KEYWORDS:

Regularity, Information and Communication Technology (ICT) Students, Business Education Students, Delta State Tertiary Institutions.

1. INTRODUCTION

The integration of Information and Communication Technologies (ICT) into education and training systems has become a transformative force worldwide, significantly changing the way knowledge is acquired, processed and disseminated. The role of ICT in equipping students with essential business and digital skills is becoming increasingly important. However, despite its recognised importance, the regularity and effectiveness of ICT use among business education students are still inconsistent and under-researched. In vocational education and training, ICT plays a key role in bridging the gap between theoretical knowledge and practical skills required in the 21st-century digital economy (Akpojotor, 2022; Oye, 2012). Business education students are expected to acquire not only basic business knowledge but also the technological competencies necessary for effective communication, data management, research, and digital entrepreneurship (Adebayo & Adesope,2020).

ICT improves pedagogical practices, supports interactive learning and promotes access to extensive information resources, which are indispensable in today's business environment. Therefore, the regular and effective use of ICT tools have become a decisive factor in the education success of business education students. Despite the recognized benefits of ICT in higher education, it has been observed that there are challenges that hinders its full acceptance and usage among students in Nigerian universities, including Delta State. These challenges range from infrastructure deficiencies such as erratic electricity supply and poor internet connectivity to limited access to ICT devices, lack of institutional support and varying levels of digital literacy among students (Okebukola, 2021; Akpojotor, 2022).

Corresponding Author: Nsima Joseph Ekone

****Cite this Article: Ekone, N.J., Okoro, P.E. (2026). Effectiveness and Regularity of the Use of Information and Communication Technology (ICT) Among Business Education Students at Delta State Tertiary Institutions. International Journal of Social Science and Education Research Studies, 6(2), 138-145***

In particular, the Business Education programme, which should ideally be a model of ICT integration due to its practical focus, often suffers from these shortcomings. Students may have access to ICT tools but lack the training or motivation to use them effectively, or they may use them regularly without using their full potential for academic advancement. Inconsistent patterns in ICT use, both in terms of frequency and purpose, raise concerns about the quality of learning outcomes and candidates' readiness to function effectively in the modern business environment (Oye, 2012). Previous research has examined the different dimensions of ICT use in Nigerian universities. For example, Adebayo and Adesope (2020) examined the availability and use of ICT among students in southern Nigeria and noted that although ICT tools are available, their use for educational purposes is not optimal. Similarly, Ajadi et al. (2008) pointed to the digital divide that persists between urban and rural institutions and between students from different socio-economic backgrounds. These studies highlight the presence of ICT infrastructure and policies but reveal a gap in the effectiveness of actual use, especially in specific fields such as vocational training. While some studies have examined the use of ICT among Nigerian students in general, there is a lack of field-specific studies that examine how regularly and effectively ICT is used to shape the competencies of business education students. This gap is significant because business education requires not only the acquisition of knowledge but also the development of applied ICT skills to prepare students for the changing demands of the workplace. Hence, the researcher deems it necessary to investigate the effectiveness and regularity of ICT usage among business education students in Delta State tertiary institutions.

Research Question

1. How frequent do business education student make use of ICT tools for academic activities in Delta State tertiary institutions?
2. What personal, institutional, and environmental factors influence the frequency and quality of ICT usage among Business Education students in Delta State tertiary institutions?
3. What are the specific challenges and barriers that hinder the regular and effective use of ICT tools in the Business Education programme in Delta State tertiary institutions?

Research Hypotheses

H_{01}: There is no significant difference in the mean rating of business education students on frequency of usage of ICT tools for academic activities among business education students in Delta State tertiary institutions based on academic level.

H_{02}: There is no significant difference in the mean rating of business education students on personal, institutional, and environmental factors that influence the frequency and quality of ICT usage among Business Education students in Delta State Tertiary institutions based on age.

H_{03}: There is no significant difference in the mean rating of business education students on challenges and barriers hindering the regular and effective use of ICT tools in Business Education programme at Delta State Tertiary institutions based on age.

II. METHODOLOGY

Research Design

A descriptive survey design was adopted for this study. because it aimed to systematically collect data and describe the characteristics, features, and facts of the study; specifically, the effectiveness and regularity of ICT usage among business education students at Delta State tertiary institutions.

Population

The target population of the study was Year 2, 200 Level, Year 3, 300 level and 400 Level Business Education students in Delta State tertiary institutions for the 2024/2025 academic session. There are 382 Business Education students in these levels in Delta State tertiary institutions.

Sample Size

The study employed simple random sampling, in which 30% of the population was randomly selected, yielding a sample of 174 business education students.

Instrument

The instrument used for data collection in this study was a questionnaire titled: Effectiveness and Regularity of Information and Communication Technology Usage among Business Education Students Questionnaire. (ERICTUBESQ). The instrument consists of two sections. Section A contains respondents' biodata, including age, gender, and level of study, while Section B comprises 50 items that were analysed. The instrument was developed on a five-point rating scale: Strongly Agree (SA); Very High Extent (VHE); or Very Frequently (VF)= 5, Agree (A), High Extent (HE); or Frequently (F)= 4, Moderately Agree (ME)= 3, Disagree (D)= 2, and Strongly Disagree (SD)= 1. The instrument's mean score was set at 3.00. A mean score of 3.00 indicates agreement, while a mean score below 3.00 indicates disagreement.

Validity

The questionnaire was face- and content-validated by three experts. Two of the experts were from the Business Education Department and one from the Guidance and Counselling Department, all at Delta State University, Abraka. To ensure the face and content validity of the instrument, copies of the questionnaire, the purpose of the study, the research question, and the hypotheses were distributed to experts, who reviewed them and provided suggestions for correction. The corrections were made before the final draft was written.

Based on the experts' judgment, the instrument was deemed valid.

Reliability

To determine the reliability of the research instrument, the questionnaire was pretested on 30 undergraduate students from the University of Benin, Benin-City who were not part of the main study population. This pilot test was conducted to assess the instrument's internal consistency and reliability. Data collected from the pilot test were analysed using Pearson Product-Moment Correlation (PPMC). The reliability coefficient for the instrument was 0.78. This indicates that the instrument is sufficiently reliable for use in the main study.

Data Collection

The questionnaire was administered directly to respondents by the researcher, with the assistance of four (4) research assistants from each institution.

Data Analysis

The mean and standard deviation were used to answer all the research questions. A t-test and Analysis of Variance (ANOVA) were used to test the hypotheses at the 0.05 significance level. The decision for research questions was based on the mean (x), where any calculated x of less than 3.00 was regarded as disagree, and any calculated x of 3.00 and above was regarded as agree.

III. RESULTS

***Research* Question 1:** How frequently do business education students make use of ICT tools for academic activities in Delta State tertiary institutions?

Table 1: Summary of Business students' responses on frequency of usage of ICT tools for academic activities in Delta State tertiary institutions

S/N	Frequency of usage of ICT tools for academic activities	X	SD	REMARK
1.	I make use of ICT tools such as laptops, tablets, projectors for my academic assignments and class projects.	3.82	0.90	Frequent
2.	I make use of Learning Management System (LMS) such as Moodle, Canvas, Google Classroom for accessing course materials.	3.82	0.82	Frequent
3.	I use online collaboration tools such as Google Docs and Microsoft Teams for Group Projects.	4.16	0.76	Frequent
4.	I participate in online learning activities, including webinars, virtual classes, and digital discussions.	3.87	0.85	Frequent
5.	I use virtual library resources such as online databases, e-books, and e-journals for research purposes.	3.59	0.98	Frequent
6.	I use academic search engines such as Google Scholar, ResearchGate, and Academia to find research papers	3.91	0.84	Frequent
7.	I use presentation software such as PowerPoint, Prezi, and Google Slides to create academic presentations.	3.60	0.98	Frequent
8.	I use statistical software such as SPSS, R, and Python for data analysis in my research	3.64	1.09	Frequent
9.	I use video conferencing tools such as Zoom, Google Meet for virtual lectures or meetings.	4.16	0.87	Frequent
10.	I use mobile applications for academic purposes such as note taking and dictionary applications.	3.63	1.09	Frequent
	Grand Mean/SD	**3.82**	**0.92**	**Frequent**

Table 1 reveals that the Mean for all ten items in the scale is above 3.00, as indicated by mean scores ranging from 3.59 to 4.16 and standard deviations of 0.76 to 1.09. However, the overall mean score of all the items was 3.82, and the standard deviation was 0.92. This indicates that business education students frequently use ICT tools for academic activities in tertiary institutions in Delta State.

Research Question 2 What personal, institutional, and environmental factors influence the frequency and quality of ICT usage among Business Education students in Delta State tertiary institutions?

Table.2: Summary of Business students' responses on personal, institutional, and environmental factors that influence the frequency and quality of ICT usage

S/N	Personal, Institutional, and Environmental factors that influence the frequency and	X	SD	REMARK
11.	Management of my institution provides adequate ICT	3.67	0.90	Agree
12.	I have reliable and consistent access to the internet	3.86	0.84	Agree
13.	The availability of ICT infrastructure, such as campus Wi-Fi, computer labs) influences my usage	3.73	0.91	Agree
14.	The internet speed is sufficient for my needs	3.53	0.95	Agree
15.	I have access to the necessary hardware such as computer, tablet and software such as SPSS, R, Python	3.28	0.93	Agree
16.	I use ICT for information gathering in my research	4.27	0.75	Agree
17.	Lecturers in my department are supportive in incorporating ICT in academic activities.	3.79	0.93	Agree
18.	My home environment is conducive, hence, my ability to engage with ICT tools for learning.	3.67	0.86	Agree
19.	My ability to make use of ICT tools both at my institution and at home help to facilitate the quality of my ICT usage.	4.10	0.97	Agree
20.	The regularity of my use of ICT tools is of great academic advantage.	3.73	0.92	Agree
	Grand Mean/SD	**3.76**	**0.90**	Agree

Table 2 reveals that the Mean for all ten items in the scale are above 3.00, as can be observed from the Mean scores, which range from 3.3 to 4.27 and the standard deviation of 0.75 to 0.95. However, the overall mean score of all the items was 3.76 and the standard deviation was 0.90. This reveals that personal, institutional, and environmental factors influence the frequency and quality of ICT usage among Business Education students in Delta State tertiary institutions. The standard deviation indicates that the responses were not far apart from the mean and one another.

Research Question 3: What are the specific challenges and barriers that hinder the regular and effective use of ICT tools in the Business Education programme in Delta State tertiary institutions?

Table 3: Summary of Business students' responses on specific challenges and barriers that hinder the regular and effective use of ICT tools

S/N	Challenges and barriers that hinder the regular and effective use of ICT tools in Business Education	X	SD	
21.	The cost of data or internet access limits my ability to use ICT tools for my studies.	3.62	1.05	Agree
22.	I sometimes face a lot of technical difficulties when using ICT tools for academic work.	4.22	0.74	Agree
23.	Lack of adequate training or skills development limit my ICT usage	3.94	0.91	Agree
24.	Power outages or unstable electricity supply affect my ability to use ICT tools	3.71	1.05	Agree
25.	My institution does not support the department in the making of subscription of software required for accessing academic platforms	3.53	0.99	Agree
26.	The high cost of purchase of ICT tools such as laptops,	3.54	0.96	Agree

	smartphones makes it difficult for me to have my personal device.			
27..	Since I do not possess a personal device, I am discouraged from using ICT tools.	3.17	0.86	Moderately Agree
28.	The high tariff on data discouraged me from using ICT tools	3.40	0.98	Moderately Agree
29.	Insufficient funding of ICT facilities by my institution is a major challenge to ICT usage.	4.00	0.79	Agree
30.	Lack of qualified personnel to teach ICT in schools.	3.76	1.04	Agree
	Grand Mean/SD	**3.67**	**0.94**	Agree

Table 3, discloses that the Mean for all the ten items in the scale are above 3.00 as can be seen from the various mean scores ranges from 3.17 – 4.22 and standard deviation of 0.74 - 1.05. Hence, the overall mean score of all the items was 3.67 and standard deviation was 0.94. This implies that The cost of data or internet access, technical difficulties, lack of adequate training or skills development, power outages or unstable electricity supply, lack of institutional support to department in the making of subscription of software required for accessing academic platforms, high cost of purchase of ICT tools, inability to possess a personal device, high tariff on data, Insufficient funding of ICT facilities, and lack of qualified personnel to teach ICT in schools are the specific challenges and barriers that hinder the regular and effective use of ICT tools in Business Education programme in Delta State tertiary institutions. The standard deviation reflects that the responses were not too far apart in their responses from the mean and to one another.

Hypotheses Testing

Hypothesis 1: There is no significant difference in the mean rating of business education students on frequency of usage of ICT tools for academic activities among business education students in Delta State tertiary institutions based on academic level.

Table 4: Descriptive statistics of ANOVA summary of frequency of usage of ICT tools for academic activities among business education students in Delta State tertiary institutions based on academic level

Academic level	N	Mean	Std. Deviation
200 Level OR YEAR 2	54	3.85	.940
300 Level OR YEAR 3	67	3.85	.821
400 Level	53	3.75	.979
Total	174	3.82	.904

Table 5: ANOVA summary of frequency of usage of ICT tools for academic activities among business education students in Delta State tertiary institutions based on academic level

Source of Variance		Sum of Squares	df	Mean Square	F	Sig. 2 tail test
Frequency of usage of ICT tools on academic activities	Between Groups	.343	2	.172	.208	.812
	Within Groups	141.134	171	.825		
	Total	**141.477**	**173**			

Data presented in Table 5 shows that the F-value of the item is .208 while the corresponding p-value is .812. The p-value is higher than alpha level of 0.05. This implies that there is no significant difference in the mean rating of business education students on the frequency of usage of ICT tools for academic activities among business education students in Delta State tertiary institutions based on academic level.

Hypothesis 2: There is no significant difference in the mean rating of business education students on personal, institutional, and environmental factors that influence the frequency and quality of ICT usage among Business Education students in Delta State Tertiary institutions based on age.

Table 6: Shows the descriptive statistics of ANOVA summary on Personal, Institutional, and Environmental factors that influence the frequency and quality of ICT usage

Age	N	Mean	Std. Deviation
16-20	65	3.60	.825
21-25	88	3.75	.938
Above 25	21	3.52	.928
Total	174	3.67	.895

Table 7: ANOVA summary of Personal, Institutional, and Environmental factors that influence the frequency and quality of ICT usage

Sources of Variance		Sum of Squares	df	Mean Square	F	Sig.
Personal, Institutional, and Environmental factors that influence the frequency and quality of ICT usage	Between Groups	1.329	2	.664	.827	.439
	Within Groups	137.338	171	.803		
	Total	**138.667**	**173**			

Data presented in Table 7 portrays that the F-value of the item is .827 while the corresponding p-value is .439. The p-value is higher than alpha level of 0.05. This indicates that there is no significant difference in the mean rating of business education students on Personal, Institutional, and Environmental factors that influence the frequency and quality of ICT usage based on age.

Hypothesis 3: There is no significant difference in the mean rating of business education students on challenges and barriers hindering the regular and effective use of ICT tools in Business Education programme at Delta State Tertiary institutions based on age.

Table 7: ANOVA summary on challenges and barriers that hinder the regular and effective use of ICT tools based on age

Source of Variance		Sum of Squares	df	Mean Square	F	Sig. 2 tail test
Challenges and barriers that hinder the regular and effective use of ICT tools	Between Groups	2.948	2	1.474	1.34	.264
	Within Groups	188.018	171	1.100		
	Total	190.966	173			

Data presented in Table 8 illustrates that the F-value of the item is .1.341 while the corresponding p-value is .264. Hence, the p-value is higher than alpha level of 0.05. This indicates that there is no significant difference in the mean rating of business education students on challenges and barriers that hinder the regular and effective use of ICT tools among business education students based on age.

IV. DISCUSSION OF FINDINGS

The study found in research question one that business education students frequently make use of ICT tools for academic activities in Delta State tertiary institutions. This finding is in corroboration with the findings of Omotayo and Haliru (2020), who found high usage of digital libraries among Nigerian university students, with moderate positive correlations between task-technology fit factors and actual usage. This study supports Okoro and Agawlor (2021) and Uwaifo, Osah and Obro (2025), who found that students commonly use ICT tools, such as Microsoft Word, Excel, PowerPoint, SPSS, and online research platforms, for assignments, presentations, work projects, and communication. Additionally, the findings align with those of Ogheneakoke, Benike, and Obro (2018) and Obro (2021), who report that students rely heavily on personal mobile devices and external internet cafes to access digital resources. However, the findings of this study contradict those of Ezeom and Ogbomo (2019), who found that although students demonstrate a basic level of ICT proficiency, the actual integration of these tools into academic work is often limited by gaps in infrastructure and pedagogical approaches.

Also, research question two found that personal, institutional, and environmental factors influence the frequency and quality of ICT usage among Business Education students in Delta State tertiary institutions. This finding is in corroboration with the findings of Eze, Chinedu-Eze and Bello (2018), who emphasized the importance of the readiness of supportive educational infrastructure and environments in promoting the use of ICTs in Nigerian higher education. Also, the finding support that of Ololube et al. (2009.) who hypothesized that standardized institutional environments often produce similar patterns of ICT use among groups of students, regardless of academic status. Again, the finding agrees with that of Oyekan and Ajayi (2022) who recommends that institutional policies should prioritize regular infrastructure maintenance, curriculum revision to include intensive ICT courses, and capacity-building programs to bridge the digital skills gap.

The finding of research question three showed that cost of data or internet access, technical difficulties, lack of adequate training or skills development, power outages or unstable electricity supply, lack of institutional support to department in the making of subscription of software required for accessing academic platforms, high cost of purchase of ICT tools, inability to possess a personal device, high tariff on data, Insufficient funding of ICT facilities, and lack of qualified personnel to teach ICT in schools are the specific challenges and barriers that hinder the regular and effective use of ICT tools in Business Education programme in Delta State tertiary institutions. This finding is in corroboration with the findings of Iyawa et al. (2025) confirm positive correlations between ICT accessibility and student

performance, though institutional barriers including unstable power supply, insufficient training, and limited support continue to impede optimal ICT integration for learning outcomes. Also, the findings are in agreement with Dirckinck-Holmfeld et al. (2023) who found in their study that East African students face significant challenges in employing ICT for study practices, with basic infrastructure issues like WiFi and power access fundamentally organising their study behaviours. Also, the finding is in agreement with the conclusion of Oye, et al. (2012), who note that socio-economic factors such as poor electricity, limited access to devices, and affordability of data continue to hinder ICT participation in Nigerian universities.

The finding of hypothesis one reveals that there is no significant difference in the mean rating of business education students on frequency of usage of ICT tools for academic activities among business education students in Delta State tertiary institutions based on academic level.

The finding of hypothesis two shows that there is no significant difference in the mean rating of business education students on Personal, Institutional, and Environmental factors that influence the frequency and quality of ICT usage based on age.

The findings of hypothesis three portray that there is no significant difference in the mean rating of business education students on challenges and barriers that hinder the regular and effective use of ICT tools among business education students based on age.

V. CONCLUSION

Based on the findings of this study, it was concluded that business education students frequently make use of ICT tools for academic activities in Delta State tertiary institutions, and that ICT usage has impact on academic performance and professional development of Business Education students in Delta State tertiary institutions to a high extent. Additionally, it was concluded that there is no significant difference in the mean ratings of business education students on Personal, Institutional, and Environmental factors influencing the frequency and quality of ICT use by age.

VI. RECOMMENDATIONS

1. Management of tertiary institutions should encourage their students to acquire their personal mobile devices such as android phones, hi-phones among others that they will use specifically for academic purposes.
2. Stakeholders of tertiary institutions should ensure that students make regular use of ICT tools since it help to boost their academic performance.
3. Management of tertiary institutions should provide sufficient fund for the purchase and maintenance of ICT facilities.
4. Training programme on the use of ICT facilities should be provided for both lecturers and students of tertiary institutions as this will encourage and train lecturers to integrate ICT tools into teaching.

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