

**ROLE OF INFORMATION AND
COMMUNICATION TECHNOLOGY IN
ADDRESSING EDUCATIONAL INEQUALITY
DURING ECONOMIC
TURMOIL IN UNIVERSITIES IN SOUTH EAST,
NIGERIA**

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Abstract

The study ascertained the roles of information and communication technology in addressing educational inequality during economic turmoil in universities in South East, Nigeria. Two research questions guided this study and two hypotheses were tested at .05 level of significance. This study adopted a descriptive survey research design. The population for the study was 3946 respondents which comprised 744 lecturers and 3202 postgraduate students among the public universities in South East, Nigeria. A sample size of 395 respondents was determined using stratified proportionate random sampling technique. The instrument for data collection was an 18-item structured questionnaire titled "Role of ICT in addressing Educational Inequality Questionnaire (RICTEIQ)". To ascertain the validity of the instrument, the questionnaire was given to two experts in Educational Management and one expert in the Department of Mathematics and Computer Education, all from Faculty of Education, Enugu State University of Science and Technology, Enugu. Reliability of the instrument was tested at using Cronbach Alpha reliability estimate. The computation yielded .81 and .79 for clusters 1 and 2 respectively with an overall reliability estimate of .80. Mean with standard deviation was used to answer the research questions while t-test statistic was used to test the hypotheses. The findings of the study revealed that ICT has significant roles in facilitating remote learning and fostering digital literacy during economic turmoil. Based on the findings, the study recommended that education stakeholders should advocate for increased investment in ICT infrastructure, ensuring that educational institutions have access to reliable internet connectivity, devices (laptops, tablets, etc.), and necessary software for effective remote learning.

Keywords: Information and Communication Technology, Educational Inequality, Economic Turmoil, Public Universities

Introduction

Education is the process through which students gain the essential abilities, knowledge, and principles necessary for fostering personal intellectual and character growth, enabling self-sufficiency, and fostering responsible citizenship. As stated by Owan (2017), education is a fundamental instrument for liberating humanity, leading societies to invest significant resources in equipping each generation with the requisite competencies, knowledge, and essential attitudes vital for future survival. According to Singha and Varma (2021), education can be defined as the process of sharing or acquiring general knowledge, honing skills, cultivating the faculties of reasoning and judgment, and generally preparing oneself for adulthood. When education is unequal, it hinders the ability of disadvantaged groups to break free from the cycle of poverty and improve their circumstances.

However, educational inequality is a term that describes the unequal distribution of educational resources, opportunities, and outcomes among various social groups, resulting in disparities in individuals' access to high-quality education and their chances for personal and socioeconomic development (Reardon, 2013). According to United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2019), educational inequality encompasses differences in educational access, attainment, and achievement based on factors like income, race, gender, geographic location, and other social determinants. Educational inequality is often a significant driver of income inequality. When educational opportunities are unequal, it can perpetuate and exacerbate income disparities, leading to economic turmoil in a society.

Economic turmoil refers to a state of severe instability and uncertainty within an economy, characterized by various negative economic indicators, such as recession, inflation, high unemployment rates, currency devaluation, and financial crises. It can result from a variety of factors, including external shocks, mismanagement of economic policies, financial market volatility, or global economic imbalances. This turmoil can lead to significant economic hardships for individuals, businesses, and governments. The COVID-19 pandemic provided a stark example of the relationship between economic turmoil and ICT in education. Many students were forced into remote learning, and those without access to computers and the internet faced significant educational inequalities (Smith, 2020). Economic disparities can exacerbate this digital divide, as low-income families are less likely to afford the necessary technology like the information and communication technology (ICT).

Information and communication technology (ICT) has become an integral part of every facet of human existence, including the realm of education. ICT stands as a fundamental element of the contemporary world, revolutionizing the educational system by substituting traditional teaching and learning methods with modern computer-based approaches. Umeagukwu and Etuh (2014), described Information and Communication Technology (ICT) as an advance in technologies that provides rich global resources and collaborative environments for the dissemination of ICT literacy materials. Information and Communication Technology (ICT) encompasses a combination of technologies for collecting, storing, processing, communicating and delivering of information related to teaching and learning processes (Johnson, 2017). Information and Communication

Technology has the potential to play a pivotal role in addressing educational inequality during economic turmoil in South East Nigeria by improving access, quality, and relevance of education, ultimately leading to a more equitable and prosperous future for all students in facilitating remote learning and fostering digital literacy.

Remote learning, also known as distance learning or online learning, is an educational method in which students and instructors are geographically separated, and instruction and learning occur through the use of technology-mediated communication (Hodges, Moore, Lockee, Trust & Bond, 2020). Remote learning is an interdisciplinary domain that has undergone a gradual evolution and proven effective in addressing educational requirements and facilitating open educational approaches (Bozkurt, 2019a and 2019b). According to Okechukwu and Ukeh (2022), ICT provides students in remote or economically disadvantaged areas with access to online educational resources. This can bridge the gap in access to quality education, especially during economic turmoil when traditional learning may be disrupted. Remote learning relies on digital technologies, including computers, the internet, and various software and platforms. To participate effectively in remote learning, students and educators must have digital literacy skills to access and navigate these technologies.

Digital literacy refers to the ability to use digital technologies and information effectively and responsibly, while remote learning involves the use of digital tools and online platforms to deliver education outside of traditional classroom settings (Ribble, 2015). Digital literacy encompasses a range of skills and knowledge, including the ability to use digital devices, software, and the internet effectively, as well as the capacity to evaluate and interpret digital information (Eshet-Alkalai, 2014). It also involves understanding concepts like cyber-security, digital privacy, and the responsible use of technology. According to Beteille and Sommer (2014), ICT can enhance digital literacy, equipping students with skills that are increasingly relevant in the modern job market. This empowers them to compete for better economic opportunities, ultimately reducing educational inequality. Digital literacy empowers lecturers to explore and implement innovative teaching methods, such as gamification, virtual reality, and online simulations, to make learning more engaging and effective.

A lecturer is an individual who delivers educational lectures or presentations, typically in a formal academic or instructional setting. Lecturers are often employed by educational institutions, such as universities, colleges, and schools, to impart knowledge and expertise in a particular subject or field to students. They play a crucial role in the dissemination of information, the facilitation of learning, and the development of critical thinking skills among their students. Lecturers can serve as role models, demonstrating the academic and professional qualities that post graduate students aspire to achieve. Meanwhile, post graduate students refer to students who are pursuing postgraduate studies, also known as graduate-level studies beyond the undergraduate or bachelor's degree level. Postgraduate students are typically enrolled in programmes such as master's degrees, doctoral (Ph. D) programmes, or other advanced studies and research in their chosen field of study in universities like in South East, Nigeria.

In South East, Nigeria, the issue of educational inequality is a critical problem, worsened by economic instability and variations in the availability of quality education. Information and Communication Technology (ICT) has surfaced as a potential means to address this educational gap, yet its effectiveness and influence in this setting are not well comprehended. Additionally, South East, Nigeria, has faced recurring economic downturns, and these downturns frequently result in harmful repercussions for the education sector. When economic instability occurs, it leads to negative impacts on educational facilities, resources, and the ability to access quality education. These adverse effects disproportionately affect disadvantaged communities and vulnerable

populations. It is based on the above discourse that the present study ascertained the roles of Information and Communication Technology (ICT) in addressing educational inequality during economic turmoil in South East, Nigeria with particular reference to facilitating remote learning and fostering digital literacy.

Statement of the Problem

Educational inequality is a pressing concern in South East, Nigeria, exacerbated by economic turmoil and disparities in access to quality education. Information and Communication Technology (ICT) has emerged as a potential solution to bridge this educational divide, but its effectiveness and impact in this context remain poorly understood. However, South East, Nigeria, has experienced cyclical economic downturns, which often have detrimental consequences for the educational system. During times of economic turmoil, educational infrastructure, resources, and access to quality education are adversely affected, disproportionately impacting marginalized communities and vulnerable groups. This exacerbates the existing educational inequality, hindering the socio-economic development in the geo-political zone. The emergence of Information and Communication Technology has presented an opportunity to address these disparities by enabling remote learning and enhancing digital literacy. Therefore, the key problem to be investigated is how Information and Communication Technology can be leveraged to effectively address educational inequality during economic turmoil in South East, Nigeria, with a specific focus on the facilitation of remote learning and the promotion of digital literacy.

Purpose of the Study

The main purpose of the study was to ascertain the roles of Information and Communication Technology (ICT) in addressing educational inequality during economic turmoil in South East, Nigeria. Specifically, the study sought to:

examine the roles of ICT in addressing educational inequality during economic turmoil in South East, Nigeria in the area of facilitating remote learning;

determine the roles of ICT in addressing educational inequality during economic turmoil in South East, Nigeria in fostering digital literacy.

Research Questions

The following research questions guided the study:

To what extent does ICT contribute to addressing educational inequality during economic turmoil in South East, Nigeria, particularly in the area of facilitating remote learning?

To what extent does ICT contribute to addressing educational inequality and fostering digital literacy during economic turmoil in South East, Nigeria?

Hypotheses

The following hypotheses were tested at .05 level of significance:

There is no significant difference in the mean scores of lecturers and post graduate students on the extent to which ICT contribute to addressing educational inequality during economic turmoil in South East, Nigeria, particularly in the area of facilitating remote learning.

There is no significant difference in the mean scores of lecturers and post graduate students on the extent to which ICT contribute to addressing educational inequality and fostering digital literacy during economic turmoil in South East, Nigeria.

Methods

This study adopted a descriptive survey research design. According to Nworgu (2015), a descriptive survey research design can be characterized as a method focused on systematically gathering and describing data. The choice of this design was that, it enabled the researcher to collect data from the respondents more appropriately. Also, the researcher used a sample from the respondents considered to be the representative of the entire population. The population for the study was 3946 respondents which comprised 744 lecturers and 3202 post graduate students among the public universities in South East, Nigeria. A sample size of 394 respondents (74 lecturers and 320 PG Students) was determined using stratified proportionate random sampling technique. The instrument for data collection was an 18-item structured questionnaire titled "Role of ICT in addressing Educational Inequality Questionnaire (RICTEIQ)".

To ascertain the validity of the instrument, the questionnaire was given to two experts in Educational Management and one expert in the Department of Mathematics and Computer Education, all from Faculty of Education, Enugu State University of Science and Technology, Enugu. Reliability of the instrument was tested using Cronbach Alpha reliability estimate. The computation yielded .81 and .79 for clusters 1 and 2 respectively with an overall reliability estimate of .80. In rating the mean, each response option had a numerical value based on real limit of numbers: VGE = 3.50-4.00; GE= 2.50-3.49; LE = 1.50-2.49; VLE = 0.00-1.49. The interpretation of the test of hypotheses was based on the significance (sig.) values from the SPSS output. The null hypothesis was not rejected when the probability values are greater than .05, but was rejected when the probability values are less than .05.

Data Analysis and Results

Research Question 1: To what extent does ICT contribute to addressing educational inequality during economic turmoil in South East, Nigeria, particularly in the area of facilitating remote learning?

Table 1: Mean scores of lecturers and PG Students on the extent to which ICT contribute to addressing educational inequality during economic turmoil in South East, particularly in the area of facilitating remote learning

S/N	ITEMS	Lecturers = 74			PG Students = 320		
		\bar{x}	SD	Dec.	\bar{x}	SD	Dec.
	ICT contributes in facilitating remote learning in the following ways:						
1	providing access to a vast array of educational materials.	2.61	.90	GE	2.54	.90	GE
2	protecting the privacy and security of online learners.	2.54	.95	GE	2.60	.94	GE
3	catering for diverse learning needs, including students with disabilities.	2.56	.93	GE	2.54	.95	GE
4	encouraging peer learning.	2.61	.98	GE	2.52	.93	GE
5	allowing students to learn at their own pace.	2.50	.93	GE	2.58	.95	GE
6	supporting educators' professional development through webinars.	2.55	.95	GE	2.61	.90	GE

7	expanding educational opportunities.	2.64	.90	GE	2.52	.92	GE
8	using data analytics to track student performance.	2.57	.95	GE	2.64	.93	GE
9	enhancing learner experience.	2.60	.89	GE	2.58	.95	GE
Grand Mean		2.58	.93	GE	2.57	.93	GE

Data analysis in Table 1 shows that the mean scores of lecturers ranged from 2.50 to 2.64 while that of PG students ranged from 2.52 to 2.64 respectively. In addition, they have grand means of 2.58 and 2.57 with standard deviations of .93 and .93 respectively. The closeness of the standard deviations showed that the respondents were homogenous in their responses. Thus, the responses of lecturers and PG students showed that ICT contributed to addressing educational inequality in terms of facilitating remote learning during economic turmoil in South East, Nigeria to a great extent.

Research Question 2: To what extent does ICT contribute to addressing educational inequality and fostering digital literacy during economic turmoil in South East, Nigeria?

Table 2: Table 1: Mean scores of lecturers and PG Students on the extent to which ICT contribute to addressing educational inequality and fostering digital literacy during economic turmoil in South East

S/N	ITEMS	Lecturers = 74			PG Students = 320		
		\bar{x}	SD	Dec.	\bar{x}	SD	Dec.
10	bridging the educational gap by providing access to educational resources for students who might not have access to traditional educational facilities during economic turmoil.	2.53	.89	GE	2.53	.93	GE
11	facilitating self-paced learning.	2.68	.91	GE	3.02	.83	GE
12	ICT allows for flexible learning schedules, which can be vital for students who need to work part-time to support their families during economic turmoil.	2.77	.88	GE	3.05	.82	GE
13	empowering learners to interact effectively with digital technologies.	2.89	.94	GE	2.96	.81	GE
14	enables online learning through platforms like Coursera.	2.60	.98	GE	2.51	.90	GE
15	providing access to a vast amount of information through the internet.	2.59	.90	GE	2.56	.92	GE
16	teaching students how to conduct online research.	2.54	.91	GE	2.56	.95	GE
17	educating students about online safety.	2.50	.95	GE	2.55	.91	GE
18	enabling the creation of online learning platforms and courses.	2.55	.99	GE	2.51	.92	GE
Grand Mean		2.63	.93	GE	2.69	.89	GE

Data analysis in Table 2 shows that the mean scores of lecturers ranged from 2.50 to 2.89 while that of PG students ranged from 2.51 to 3.05 respectively. In addition, they have grand means of 2.63 and 2.69 with standard deviations of .93 and .89 respectively. The closeness of the standard deviations showed that the respondents were homogenous in their responses. Thus, the responses of

lecturers and PG students showed that ICT contributed to addressing educational inequality and fostering digital literacy during economic turmoil in South East, Nigeria to a great extent.

H₀₁: There is no significant difference in the mean scores of lecturers and post graduate students on the extent to which ICT contribute to addressing educational inequality during economic turmoil in South East, Nigeria, particularly in the area of facilitating remote learning.

Table 3: Summary of t-test analysis on the mean scores of lecturers and PG Students on the extent to which ICT contribute to addressing educational inequality during economic turmoil in South East in terms of facilitating remote learning

Group	n	\bar{x}	SD	df	p-value	Decision
Lecturers	74	2.58	.93	392	.115	Ho ₁ not rejected
PG Students	320	2.57	.93			

Data on Table 3 show that at 392 degree of freedom, the p-value was .115 which is greater than .05 level of significance set for this study. This implies that the null hypothesis was not rejected and, therefore, there is no significant difference between the mean scores of lecturers and post graduate students on the extent to which ICT contribute to addressing educational inequality during economic turmoil in South East, Nigeria, particularly in the area of facilitating remote learning.

H₀₂: There is no significant difference in the mean scores of lecturers and post graduate students on the extent to which ICT contribute to addressing educational inequality and fostering digital literacy during economic turmoil in South East, Nigeria.

Table 4: Summary of t-test analysis on the mean scores of lecturers and PG Students on the extent to which ICT contribute to addressing educational inequality and fostering digital literacy during economic turmoil in South East

Group	n	\bar{x}	SD	df	p-value	Decision
Lecturers	74	2.63	.93	392	.098	Ho ₂ not rejected
PG Students	320	2.69	.89			

Data on Table 4 show that at 392 degree of freedom, the p-value was .098 which is greater than .05 level of significance set for this study. This implies that the null hypothesis was not rejected and, therefore, there is no significant difference between the mean scores of lecturers and post graduate students on the extent to which ICT contribute to addressing educational inequality and fostering digital literacy during economic turmoil in South East, Nigeria.

Discussion of Findings

The finding of the study showed that ICT contributed to addressing educational inequality in terms of facilitating remote learning during economic turmoil in South East, Nigeria to a great extent. The key findings of this research indicated that ICT offers several advantages, including access to a wide range of educational resources, the ability to participate in online classes, and the flexibility to learn at one's own pace. The finding is in line with Bozkurt, (2019a) and (2019b),

Okechukwu and Ukeh (2022), who posited that ICT provides students in remote or economically disadvantaged areas with access to online educational resources. Further finding shows that there was no significant difference between the mean scores of lecturers and post graduate students on the extent to which ICT contribute to addressing educational inequality during economic turmoil in South East, Nigeria, particularly in the area of facilitating remote learning.

The finding of the study showed that ICT contributed to addressing educational inequality and fostering digital literacy during economic turmoil in South East, Nigeria to a great extent. The integration of ICT in education enhances digital literacy among students. It equips them with essential skills to navigate and make use of digital technology, which is increasingly important in today's information-driven world. The finding of the study is in line with Okechukwu and Ukeh (2022), who posited that ICT is imperative in fostering digital literacy. The hypothesis tested showed that there was no significant difference between the mean scores of lecturers and post graduate students on the extent to which ICT contribute to addressing educational inequality and fostering digital literacy during economic turmoil in South East, Nigeria.

Conclusion

This study has shed light on the pivotal role of Information and Communication Technology (ICT) in mitigating educational inequality during periods of economic turmoil in South East, Nigeria. The findings of this research unequivocally demonstrated that ICT has played a significant and transformative role in facilitating remote learning and fostering digital literacy and, by extension, addressing educational disparities. In the face of economic turmoil, South East, Nigeria has faced numerous challenges in maintaining educational access and quality. However, the integration of ICT into the educational landscape has shown remarkable potential to bridge the gaps created by economic hardships.

Recommendations

Based on the findings, the following recommendations were proffered:

10. State governments in South East, Nigeria should invest in improving internet connectivity and infrastructure in different areas. This can be achieved through public-private partnerships and government initiatives.
11. Non-governmental organizations should promote digital learning platforms that offer free or low-cost educational content. These platforms can provide access to quality educational resources for students who may not have access to traditional schooling due to economic constraints.

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