

# EFFECT OF ABSENCE OF WIRELESS HOTSPOT ON STUDENTS' PERFORMANCE IN COMPUTER SCIENCE IN TERTIARY INSTITUTIONS IN EBONYI STATE

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## Abstract

*The study sought to find the effect of absence of wireless hotspot on students' performance on computer science students in tertiary institutions in Ebonyi State Nigeria. Four research questions guided the study. Two hundred respondents were drawn by simple random sampling from five public tertiary institutions in Ebonyi State. Data were collected using a 20 item (grouped of fives each) researcher formulated structured questionnaire. The Cronbach alpha was used to establish the reliability coefficient (r). This was found out to be 0.68. data was analyzed using mean and chi-square. Results showed amongst others that absence of wireless hotspot technology affects students of computer science disciplines, and that government plays great roles in enhancing academic performance of students. It was recommended that wireless hotspot technologies should be provided, and should be fully functional where available. Besides, government should properly fund institutions and that wireless hotspot technologies in tertiary institutions should be backed by law.*

**Key Words:** Wireless Hotspot, Students' performance, Computer Science

## INTRODUCTION

### Background of the Study

It is a common saying that in human existence, change is the only thing that is constant, man learns by studying his environment and making changes to the changing time. This is even as Fremlin (1985) postulates that man has multiplied and became civilized by changing his environment to suit himself. This change too affects how information are generated and transmitted and made available to man who employ this back to the system; this cycle continuous and brings about advancement and varieties to suit the very changing time and technology.

Formal education was introduced in Nigeria by Europeans around 1840's (Futurelearn 2021). This education was termed western education was to give trainings and subsequent certification to back it up. The method of imparting knowledge on students then was basically through physical contact and through hardcopies. The knowledge imparted affects every aspect of the nation and with its attendant development in security, economy, politics, education et cetera.

Students are impacted by the relevancy, how recent/current the materials they read, the contacts and availability of these materials (Tety, 2016). For effective education to take place, the quality of knowledge imparted on the students is vital and should be tailored towards a desired goal. Should there be deliberate or non-deliberate actions geared towards frustrating these goals, it then becomes a big problem to the society at large, this corroborates as Google puts it that flexibility in material handling brings about security, scalability, efficiency, cost reduction, collaboration, competitive advantage, accessibility data security and system integration.

The means and methods of imparting knowledge on students become a point of interest in attaining the educational goal. In Nigeria and also in the South Eastern part of Nigeria, various means of imparting knowledge to students are noticed; the physical contact method with lecturers/facilitators and online method. Besides, we have physical material stocked in the libraries where students and lecturers are meant to read and use. Students are expected to have been thoroughly grounded in his/her field of study. But these days due to unavailability of relevant materials this goal is not achieved effectively. The avenue where students interact freely with their peers and share such knowledge locally and globally with a click of a button for exchange of ideas is grossly hindered.

### **1. Statement of the problem**

Since information in this era is basically based in cloud and shared there too, the availability of such data and information for easy reach to students of high institution, especially our focus-computer science is essential and necessary for effective teaching and learning to take place. The absence of wireless hotspot in our tertiary institutions have resulted to adverse effect on the students studying computer science, this has resulted to attendant effects on the society, parent/guardians to a large extent. As these students are poorly baked due to the aforementioned problem, students may not be able to show the relevant prowess associated to having read or studied the course. Absence of wireless hotspots in our tertiary institutions have indirectly posed a great challenge on graduates because they come out half-baked even with their degrees and certificates but may not be able to show competency/output what they have learned because they had no access to myriads of materials freely for effective research, teaching and learning. Lynch (2017) and Gerardo (2020) stressed that the resultant effect of this is that students are assessed and evaluated based on the limited and poor materials given to them whereas they would have had enough up-to-date, comprehensive and exhaustive materials that would have broadened their knowledge or horizon in computer science. The resultant consequences are that students become products not reliable and even “unemployable.” The problem of this study shall engage our curiosity of the effect of absence of wireless hotspots on students’ performance in computer science in tertiary institutions in Ebonyi State.

### **2. Purpose of the study**

The main purpose of this study is to investigate the effect of absence of wireless hotspots in tertiary institutions in Ebonyi State. The study shall specifically investigate the following:-

- i. The effect of absence of wireless hotspot on students’ performance on Computer Science Students in Tertiary Institutions in Ebonyi State.

- ii. The effect of various computer professional bodies/ stake holders in enhancing viable wireless hotspot in Tertiary Institutions in Ebonyi State.
- iii. The effective use of well trained computer professionals in control of wireless hotspot in Tertiary Institutions in Ebonyi State.
- iv. The effect of Government's role on absence of wireless hotspot in Tertiary Institutions in Ebonyi State.

### **Research Questions**

The study was guided by four research questions which include;

1. What are the effects of having absence of wireless hotspot on Computer Science Students in Ebonyi State?
2. What are the roles of various Computer Professional bodies/Stake holders in enhancing a viable wireless hotspot technology?
3. To what extent are well-trained Computer Professionals used in control of wireless hotspot in Tertiary Institutions in Ebonyi State?
4. What measures should the Government apply to improve the absence of wireless hotspot in Tertiary Institutions in Ebonyi State?

### **Hypothesis**

Four research hypotheses were tested on 0.05 level of significance and this guided the study.

**H<sub>0</sub>**: There are no significant effects on absence of wireless hotspot on Computer Science Students in Tertiary Institutions in Ebonyi State

**H<sub>1</sub>**: There are significant effects on absence of wireless hotspot on Computer Science Students in Tertiary Institutions in Ebonyi State.

**H<sub>0</sub>**: There is no significant effect by various professional bodies/stake holders in enhancing viable wireless hotspot in Tertiary Institutions in Ebonyi State.

**H<sub>1</sub>**: There is significant effect by various stakeholders in enhancing viable wireless hotspot in Tertiary Institutions in Ebonyi State

**H<sub>0</sub>**: There is no significant effect on well-trained Computer Professionals on wireless hotspot in Tertiary Institutions in Ebonyi State.

**H<sub>1</sub>**: There are effects on extent of well-trained Computer Professionals on wireless hotspot in Tertiary Institutions in Ebonyi State.

**H<sub>0</sub>**: There is no significant effect of Government on absence of wireless hotspot in Tertiary institutions in Ebonyi State.

**H<sub>1</sub>**: There is significant effect of Government on absence of wireless hotspot in Tertiary institutions in Ebonyi State.

### **Area of Study**

The area of study was tertiary institutions in Ebonyi State, comprising Colleges of Education, Universities and polytechnics.

### **Population of the Study**

The population of study comprised all Computer Science students in tertiary institutions in Ebonyi State

### **Sample and Sampling Techniques**

A sample of 200 respondents was randomly selected from all the public tertiary institutions in the three senatorial zones of Ebonyi State. They were selected randomly using random sampling techniques. Their distribution were as follows:- Ebonyi State University (30) students; Alex-Ekwueme Federal University, Ndufu Alike (30) students, Ebonyi State College of Education, Ikwo (30) students; Akanu-Ibiam Federal Polytechnic, Uwana (30) students; Federal College of Agriculture Ishiagu (30) students and David Umahi University of Medical Sciences, Uburu (30). Twenty (20) Staff shall be drawn from the institutions.

### **Instrument for Data Collection**

The instrument for data collect was done using a questionnaire and the research was a field study/work. The Questionnaire was entitled “Effect of Absence of Wireless Hotspot on Students’ Performance in Computer Science in Tertiary Institutions in Ebonyi State.” A five point scale will be used for the responses: Strongly Agree (5) points, Agree (4) points, Neutral (3) points, Disagree (2) points, Strongly Disagree (1) point. The instrument had a preliminary section to handle personal data, while other four sections handled effects of having absence or wireless hotspot on Computer Science Students in Ebonyi State,, roles of various Computer Professional bodies/Stake holders in enhancing a viable wireless hotspot technology,, the extent are well-trained Computer Professional used in control of wireless hotspot in Tertiary Institutions in Ebonyi State,, measures Government apply to improve the absence of wireless hotspot in Tertiary Institutions in Ebonyi State.

### **Validation of Instruments**

The instrument shall be validated by three experts from the departments of Statistics, Educational Administration and Computer Science of Ebonyi State University.

### **Reliability of Instruments**

The Reliability was determined using Cronbach Alpha (Ajayi, 2013), (Taber, 2017). A reliability coefficient ( $r$ ) of 0.68 was achieved which indicated that the instrument was reliable. More so, a test re-test was administered on 80 respondents- seventy (70) students and ten (10) staff drawn within the six Public tertiary institutions in Ebonyi State.

### **Method of Data Collection**

Questionnairng was the method used for data Collection. Research Assistants shall be employed while administering the questionnaire. The Researcher collected the completed instruments from the respective respondents.

### Method of Data Analysis

The analysis of the data collected was done using mean, while 0.05 level of significance was used to test the hypothesis using chi-test. The decision rule was that any mean value that was 3.0 and above was accepted while those that fell below 3.0 were rejected.

### PRESENTATION AND ANALYSIS OF THE DATA

The data collected from field for answering research questions and testing hypotheses are presented in tables to highlight the findings of the study.

#### Research Question 1

What are the effects of absence of wireless hotspot on computer science students in Ebonyi State?

**Table 1:**

*Effects of having absence of wireless hotspot on computer science students in Ebonyi state*

S/NO	Responses	SA	A	N	D	SD	WEIGHTED MEAN	DECISION
1	Stand alone computer systems and devices are predominantly used by staff and students for research, teaching and learning	53	65	55	15	12	3.08	ACCEPT
2	Wireless hotspots are available in the institution	28	47	68	32	25	3.18	ACCEPT
3	Wireless hotspots are available but restricted or limited in service	35	67	57	28	13	2.99	REJECT
4	Research and learning are done fully through the use of wireless hotspot technology	18	58	63	47	14	2.61	REJECT
5	Absence of wireless hotspot technology affect students of computer science negatively	51	35	59	39	16	3.04	ACCEPT

#### Source: Researchers field survey 2024

From table1 above, the respondents varied in their opinions on effect of having absence of wireless hotspot technology on computer science students in Ebonyi State as stated below:

The respondents agreed with respect to items 1, 2 and 4. They therefore agreed that

- Standalone computer systems and devices are predominantly used by staff and students for research, teaching and learning

- Wireless hotspots are available in the institution
- Absence of wireless hotspot technology affects students on computer science negatively

But the respondents rejected question items 3 and 4. This negates that wireless hotspots are available but restricted or limited in service, and that research and learning not done fully through the use of wireless hotspot technology.

### Research Question 2

What are the roles of various Computer Professional bodies/Stake holders in enhancing a viable wireless hotspot technology?

**Table 2**

*Roles of Computer Professionals/bodies/Stake holders in enhancing a viable wireless hotspot technology*

S/NO	RESPONSES	SA	A	N	D	SD	WEIGHTED MEAN	DECISION
1	Professional bodies checkmate and supervise various wireless hotspot technology standards	63	78	38	15	6	3.8	ACCEPTED
2	There are certified professionals in the employ of our institution	61	59	45	25	10	3.6	ACCEPTED
3	There are frequent stakeholders forums/expos for evaluation and re-evaluation of wireless hotspot standards and efficiency	20	72	64	32	12	3.2	ACCEPTED
4	Outcomes of professional body's proceedings are stepped down to tertiary institutions	28	58	75	22	17	3.2	ACCEPTED
5	Blacklisting of staff and institutions who do not follow proper wireless hotspot technology standards in the discharge of their duties in computer science programmes	14	39	74	46	27	2.8	REJECTED

### Source: Researchers field survey 2024

From table 2, items 1, 2, 3 and 4 are accepted alluding to the following: professional bodies checkmate and supervise various wireless hotspot technology; also are the fact that these institutions have certified professionals in their employ. Similarly, they inferred that frequent forums/expos for evaluation and re-evaluation of wireless hotspot standards/ efficiency. The respondents also affirmed that outcomes of professional bodies' proceedings were stepped down to the various institutions. Item 5 was rejected which means the respondents disagreed that staff and institutions who do not follow proper wireless hotspot technology standards in the discharge of their duties in computer science departments should be blacklisted.

### Research Question 3

To what extent are well-trained Computer Professionals used in control of wireless hotspot in Tertiary Institutions in Ebonyi State?

**Table 3**

*To what extent are well trained computer professionals used in the control and management of wireless hotspot in tertiary institution?*

S/NO	RESPONSES	SA	A	N	D	SD	WEIGHTED MEAN	DECISION
1	There are computer professionals in our institution	81	66	37	12	4	4.0	Accepted
2	We have well trained computer professionals	62	70	55	11	2	3.8	Accepted
3	Computer professionals do supervise, teaching and research using wireless hotspot in computer science	35	58	76	21	10	3.4	Accepted
4	Wireless technology jobs are outsourced in the institution	9	40	85	49	17	2.8	Rejected
5	Well trained computer professionals frequently leave our institution for better job opportunities	16	22	72	62	28	2.6	Rejected

**Source: Researchers field survey 2024**

From table 3, the respondents agreed to items 1, 2 and 3 respectively: they agreed to the fact that they have computer professionals in their institutions, and that these professionals are well trained, and also that these professionals do supervise and teach and conduct research using wireless hotspot in computer science courses. While they rejected items 4 and 5 implying that wireless technology jobs are not outsourced by these institutions, and also that well-trained computer professionals do not frequently leave their institutions' employ for greener pasture

**Research Question 4**

What measures should the Government apply to improve the absence of wireless hotspot in Tertiary Institutions in Ebonyi State?

**Table 4**

*Computation of Expected Frequency of Cell Row*

Item No	Question	SA	A	N	D	SD	TOTAL
1		77 (58.60)	82 (73.40)	23 (41.40)	10(17.00)	8(9.60)	200
2		62 (58.60)	73 (73.40)	41(41.40)	17(17.00)	7(9.60)	200
3		46 (58.60)	74(73.40)	50(41.40)	21(17.00)	9(9.60)	200
4		50(58.60)	70(73.40)	47(41.40)	24(17.00)	9(9.60)	200
5		58(58.60)	68(73.40)	46(41.40)	13(17.00)	15(9.60)	200
<b>TOTAL</b>		293	367	207	85	48	1000

**Source: Researchers field survey 2024**

Using the formula,  $E(RC) = FR \times FC / N$

Where  $E(RC)$  = Expected frequency of cell roe

FR = Total row frequency

FC = Total column frequency

N= Total frequency

Example:

Row1 Cell 1,  $E = 200 \times 293 / 1000 = 58.60$

Row1 Cell 2,  $E = 200 \times 367 / 1000 = 73.40$

Row1 Cell 3,  $E = 200 \times 207 / 1000 = 41.40$

Row1 Cell 4,  $E = 200 \times 85 / 1000 = 17.00$

Row1 Cell 5,  $E = 200 \times 48 / 1000 = 9.60$  et cetera

**Table 5**

*Measures Governments apply to improve the absence of wireless hotspot in Tertiary Institutions in Ebonyi State?*

OBSERVED(O <sub>i</sub> )	EXPECTED(E <sub>i</sub> )	O <sub>i</sub> -E <sub>i</sub>	(O <sub>i</sub> -E <sub>i</sub> ) <sup>2</sup> /E <sub>i</sub>
77	58.6	18.4	5.777474
82	73.4	8.6	1.007629
23	41.4	-18.4	8.177778
10	17	-7	2.882353
8	9.6	-1.6	0.266667
62	58.6	3.4	0.19727
73	73.4	-0.4	0.00218
41	41.4	-0.4	0.003865
17	17	0	0
7	9.6	-2.6	0.704167
46	58.6	-12.6	2.709215
74	73.4	0.6	0.004905
50	41.4	8.6	1.786473
21	17	4	0.941176
9	9.6	-0.6	0.0375
50	58.6	-8.6	1.262116
70	73.4	-3.4	0.157493
47	41.4	5.6	0.757488
24	17	7	2.882353
9	9.6	-0.6	0.0375
58	58.6	-0.6	0.006143
68	73.4	-5.4	0.397275
46	41.4	4.6	0.511111
13	17	-4	0.941176
15	9.6	5.4	3.0375



		SUM	34.48881
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**Source: Researchers field survey 2024**

From table 5 above, using an online chi square tool from socscistatistics.com, we have that:

There is significant effect of Government on absence of wireless hotspot in Tertiary institutions in Ebonyi State,  $X^2 (16, N=25) = 34.4888, p = .004666$

**DISCUSSION OF THE FINDINGS**

Thus far from the analysis of the data collected in this study, as evidenced in the findings, one visible effect of having absence of wireless hotspot is that it affects computer science students negatively in the research and studies. Similarly, another point the research pointed out is that research and learning is not carried out fully through the use of use of wireless hotspot technology which militates against students having better grades and knowledge as pointed out by (Pedro et al, n.d)

The research also found out that government plays great roles in enhancing students’ academic performance. Further findings from the research show that institutions under purview had stand alone computer systems- having such may not aid teaching, research and learning effectively since these systems are not in a network especially not connected to the internet.

**CONCLUSION**

From the findings of this study, it was concluded that absence of wireless hotspot technologies in tertiary institutions affect students negatively since students might not be properly grounded in their course of study- which in this case is computer science. The findings further let the researcher to conclude that government and professional bodies have roles to play for wireless hotspot technologies to be implemented in tertiary institutions

**RECOMMENDATIONS**

From the findings, wireless hotspot technology should be provided for computer science students in tertiary institutions in Ebonyi State. More so, where these facilities are available, the technology should be fully utilized for research, teaching and learning. These recommendations should also be backed by the necessary laws and should be enforced appropriately where necessary. It is also recommended that tertiary institutions should be properly funded by the government. There should also be frequent cross-carpeting of wireless hotspot ideas between local and international computer professionals. Government should also instill certification by professionals before being in charge of information technology offices; one of the recommendations is that computer science staff and students should be properly remunerated.

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