



# **An Assessment Of ICT Infrastructure Standards In Polytechnics In Rivers State**

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## **ABSTRACT**

The study looked at an assessment of ICT infrastructural standards in Polytechnics in Rivers State. Two research question and one hypothesis was used in the study. The study employed descriptive survey research design. The researcher used twenty-five (25) lecturers from the department of Computer Science in the various Polytechnics in Rivers State. The population was obtained through the assistant of the head of department in computer science from the various polytechnics. As a result of the small population size, the entire population was used as sample for the study. The study developed an instrument titled “An Assessment of ICT Infrastructure Standards in Polytechnics” (AAICTISP). The instrument was subjected to content validation by an expert in computer Science in Niger Delta University, Bayelsa State. A pilot study was conducted in three (3) lecturers in the department of Computer Science in selected tertiary institution in Bayelsa State. Pearson Product Moment Correlation Coefficient was used to obtain a value of 0.75. The study employed the use of simple mean, standard deviation and simple percentages to analyze the researcher questions. Findings obtained from research question 1 showed that ICT infrastructures in polytechnics in Rivers State are outdated, ICT infrastructures do not have enough rooms and ICT Infrastructure are below international standards. Also, findings from research question 2 showed that ICT infrastructure in polytechnics are poorly maintained, there are no facility maintenance program for ICT facility, the school management do not have budget for facility maintenance for ICT units, ICT facility do not go through scheduled routine maintenance exercise and ICT facilities in most polytechnics do not have designated management forecast and program on its futuristic design. Finally, it was recommended that the school management in the various polytechnics should set up adequate maintenance and development plan for their ICT facilities.

**Keywords:** Assessment, ICT Infrastructure, Standards

## **INTRODUCTION**

The advent of information and communication technology had altered the world system of education. The current ICT system had migrated the educational program from analogue to digital systems. Information and communication technology (ICT) is the convergence of communication, information and media technologies, which are based on the common digital technology Sallai, (2012). ICT infrastructure/facility can be described as electronic device, equipment, or tool used for collection, processing, storage, retrieval or transfer of information, and its associated services. ICT infrastructure refers to the hardware or equipment, software applications, and services associated with ICTs, including telecom networks.

According to Akinsola et al. (2005) stated that, ICT infrastructure could be categorized into hardware, which comprises telephone, computer, LAN network, hub, printer, scanner, television, fax, codec camera, projector, radio, Video CD, audio tape players and microphone, software that includes windows, Ms Office and others. ICT infrastructures comprise even the earlier technologies such as radio and television. The principal device for processing, storage or retrieval of information is the computer. When two or more of these computers are interconnected, they form a network, and can intercommunicate and exchange information.

The value of these computers to business, researchers, government and individuals actually increases greatly when they are so connected into networks. Networked computers can transmit voice messages, alphabetical and numerical data, and video over communication media. Connections of computers into networks are of different categories depending on the needs of an organization. Local area networks join computer at a particular site, or within a small geographical spread, such as an office building or an academic campus.

On the other hand, wide area networks interconnect computers and small networks to larger networks over greater geographic area, including different continents. In this category of networks, the computers, or smaller networks are linked by means of communication medium such as cables, optical fibres, wireless links, or satellites. Access to the networks is via a modem, a device that allows computers to communicate over telephone lines. The largest wide area network in the world is the internet, a collection of networks and devices linking millions of computer users all over the world. This is a product of merged technologies of computer, computer networks and communication, and also the basis of modern day ICT infrastructures. Communication technologies include cable, satellite, fiber optics and wireless links. Network technologies include personal area network (PAN), campus area network (CAN), intranets, Extranets, LAN, WAN, and the internet. Computer technologies include disks, flash memories, multimedia projectors, interactive electronic boards, and personal computers (Anunobi and Edeka, 2010). Services and resources associated with both modern and the earlier technologies include distance/E-learning, videoconferencing, E-library, E-mailing, the web etc. Computer provides easy and efficient means of information processing, storage and retrieval making clerical and general administrative duties interesting. In higher education institutions, common ICT infrastructure and services are usually computers, the internet, and services related to the internet. Computer networks interconnect computers in the University for Easy Communication, sharing of resources, and collaboration among students and lectures. E-learning makes education available even to remote positions and teleconferencing/videoconferencing enables transfer of services of experts from other universities. Additionally, the internet makes information search and access to variety of information easy. All these mean that in higher education institutions, common ICT infrastructure and services are usually computers, the internet, and services related to the internet and they have obviously important impact on the activities conducted. Additionally, the extents to which an institution can provide all the necessary ICT facilities are a measure of the status of the institution.

Unfortunately, Nigeria universities are still grappling with the problem of inadequate ICT infrastructure. According to Philip [4], tertiary institutions in Nigeria lack adequate infrastructure to effectively tap into the opportunities offered by the cyberspace. Computers are not enough for students use in most Nigeria universities very few of which have campus-wide network. The internet facilities are non-existent in many campuses. Moreover, where they are available, they are plagued by one problem or another, including low access speed, insufficient computers for users, poor power supply etc. Under these circumstances, it could be necessary to examine ICT infrastructure issues in Nigeria higher education institutions. This study is therefore undertaken to evaluate the ICT infrastructure/facilities and applications in Nigeria universities.

#### **Purpose of the Study**

The study looked at an assessment of ICT infrastructural standards in Polytechnics in Rivers State. The study sought to:

1. Find out the state of ICT facility in various polytechnics in Rivers State.

2. Find out management strategy in maintenance of ICT infrastructure in various polytechnics in Rivers State.

### **Research Questions**

The following research questions were adopted and used for the study:

1. What is the state of ICT facility in various polytechnics in Rivers State?
2. What is management strategy in maintenance of ICT infrastructure in various polytechnics in Rivers State?

### **Scope of the Study**

The study is limited to the assessment of ICT infrastructural standards in Polytechnics in Rivers State.

## **LITERATURE REVIEW**

### **The State of ICT in Nigeria Tertiary Institutions**

Nigerian tertiary institution is still on the verge of migrating into ICT compliant system. Government through TETFund exercises had contributed to a great extent in funding the tertiary institutions to meet up with general global demand. According to Adomi and Kpangban (2010) the new partnership for African Development (NEPAD) launched e-schools initiative, intended to equip all African schools with ICT facilities, including computers, radio and television sets, phones and fax machines, scanners, digital cameras and copiers among others and to connect the students to the internet. He stated that the aim of the initiative was to impart ICT skills to young Africans in schools and noted that although efforts have been made to ensure that ICTs are available and used in Nigeria schools, the level of uptake is still low.

Philip, Oluwagbemi and Oluwaranti (2010) observed that tertiary institutions in Nigeria lack adequate ICT infrastructure to effectively tap into the opportunities offered by the cyberspace. He stated that personal computers are available in most Nigeria tertiary institutions, but they are not readily accessible to students because of the low computer to student ratio, put at about 1 to 40. In addition, the basic software needed for practical works are not available and where they are available, they are not accessible because of the low ratio. It was remarked that for internet connectivity in most tertiary institutions in Nigeria, the bandwidth subscribed is too small to support any meaningful activity during peak period. He also noted that, where ICT infrastructures like multimedia projectors are available, other infrastructures like interactive whiteboards are lacking.

Anunobi and Edoke (2010) examined the use of ICT facilities in Nigeria University Libraries and discovered that personal computer, photocopiers and CD-Rom were the ICT facilities mostly used in serial units of the universities. Other facilities identified were printers, LAN, scanner, fax machine and the internet. It was identified that none of the libraries used E-mail or WAN facilities in the serials unit.

Osofisan and Osunade (2007) evaluated the ICT services available in educational and research institutes in Nigeria. It was observed that, in most of the educational and research institutes surveyed, ICT infrastructure had just been put in place. Although, there were computer systems available for many years, but their use was limited to only word processing. The authors stated that the drive in most of the institutions was on internet service. The study revealed equipment and services available in the institutes and universities to include printers, scanners, LAN, Email, the internet, websites, intranet, telephone. It was found that there was no WAN connectivity between any two educational or research institutes in Nigeria. The study also revealed that not all the institutes had websites, and those who had did not update them regularly and the content present on most of the websites were not useful to researchers.

Akomolafe (2009) investigated the strategies and challenges of ICT infrastructure development for university education in Nigeria. He stated that available infrastructure for ICT in most Nigeria universities were grossly inadequate. He identified that most university students still visit the internet off campus because of too much demand on the internet on-campus. Respondents indicated that computers available for internet browsing were inadequate to meet the demand for its usage. He observed that much attention was given to computers and the internet while other ICT infrastructures such as CD-ROM, radio, tape, television, mobile phones and others were lacking and that the level of awareness on the extent to which ICT could be useful in education was still low, noting that many lecturers were not conversant with ICT usage in classroom situations. Kumah and Tanye (2009) sought the views of tertiary institution students

on ICT usage in Ghana. He stated that Ghana’s public universities’ ICT growth was lagging in comparison to the country’s business usage. It is worth noting here that the use of ICTs, such as the interactive whiteboards, was increasing in a number of lecture halls. Email was used by most students, but it was limited to their personal communication with friends and family members.

**METHODS**

The study employed descriptive survey research design. The researcher used twenty five (25) lecturers from the department of computer science in the various polytechnics in Rivers State. The population was obtained through the assistant of the head of department in computer science from the various polytechnics. As a result of the small population size, the entire population was used as sample for the study. The study developed an instrument titled “An Assessment of ICT Infrastructure Standards in Polytechnics” (AAICTISP). The instrument was subjected to content validation by an expert in computer Science in Niger Delta University, Bayelsa State. A pilot study was conducted in three (3) lecturers in the department of computer science in selected tertiary institution in Bayelsa State. Pearson Product Moment Correlation Coefficient was used to obtain a value of 0.75. The study employed the use of simple mean, standard deviation and simple percentages to analyze the researcher questions.

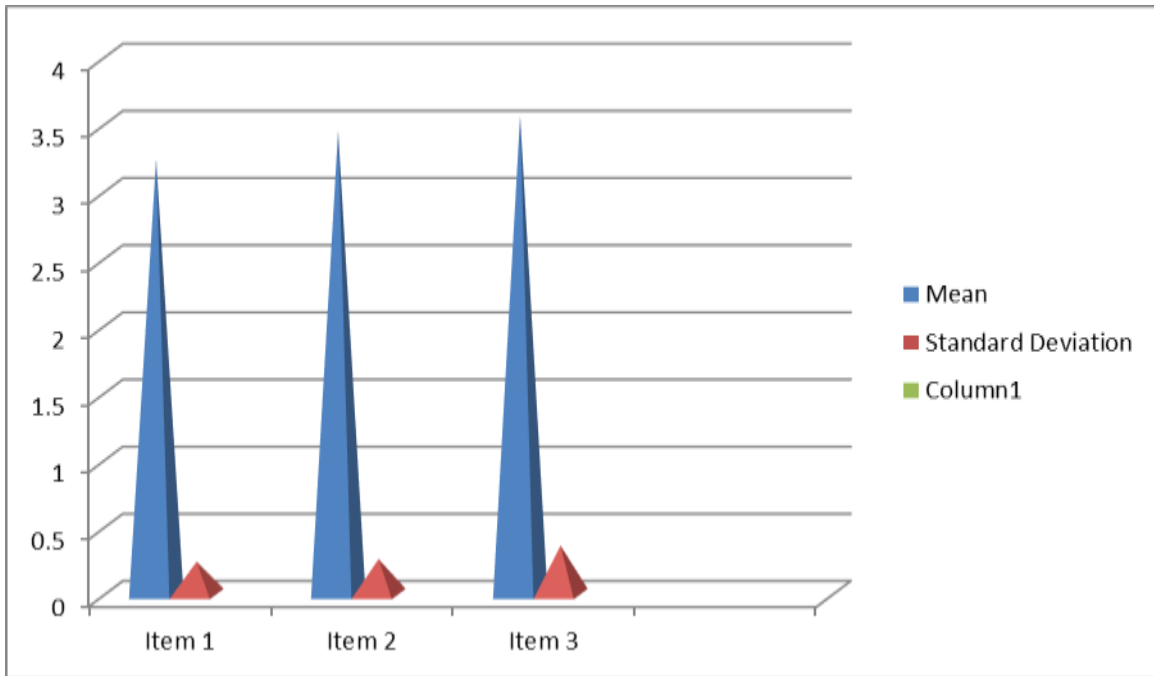
**DATA ANALYSIS**

**Research Question one:** *What is the state of ICT facility in various polytechnics in Rivers State?*

**Table 1:** The state of ICT facility in various polytechnics

S/N	Item	Mean	Standard Deviation	Decision
1	ICT infrastructure in polytechnics in Rivers State are outdated	3.24	0.24	Agree
2	ICT infrastructure do not have enough rooms	3.45	0.26	Agree
3	ICT Infrastructure are below international standards	3.56	0.36	Agree
	<b>Grand Mean</b>	<b>3.42</b>	<b>0.29</b>	Agree

Findings from research question 1, table 1 showed that ICT infrastructures in polytechnics in Rivers State are outdated, ICT infrastructures do not have enough rooms and ICT Infrastructure are below international standards.



**Figure 1:** The state of ICT facility in various polytechnics

Findings from figure 1 revealed that item 1, 2 and 3 had a mean and standard deviation of 3.24, 0.24; 3.45, 0.26; and 3.56, 0.36 respectively. This signifies that polytechnics in Rivers State have poor ICT infrastructures.

**Research Question Two:** *What is management strategy in maintenance of ICT infrastructure in various polytechnics in Rivers State?*

**Table 2:** Management strategy in maintenance of ICT infrastructure in various polytechnics

S/N	ITEMS	% YES	%NO
1	ICT infrastructure in polytechnics are poorly maintained	80	20
2	There are no facility maintenance program for ICT facility	90	10
3	The school management do not have budget for facility maintenance for ICT units	85	15
4	ICT facility do not go through scheduled routine maintenance exercise	95	5
5	ICT facilities in most polytechnics do not have designated management forecast and program on its futuristic design.	98	2

Findings obtained from research question 2, table 2 showed that ICT infrastructure in polytechnics are poorly maintained, there are no facility maintenance program for ICT facility, the school management do not have budget for facility maintenance for ICT units, ICT facility do not go through scheduled routine maintenance exercise and ICT facilities in most polytechnics do not have designated management forecast and program on its futuristic design.

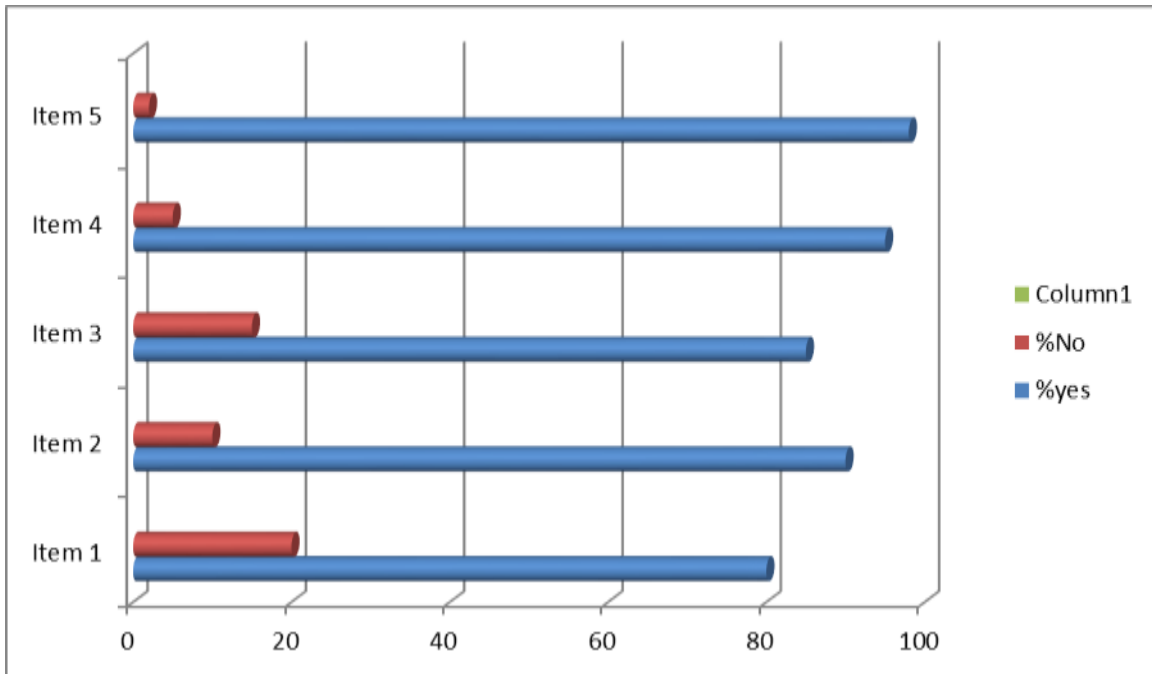


Figure 2: Management strategy in maintenance of ICT infrastructure in various polytechnics

Findings obtained from figure 2 showed that item 1, 2, 3, 4 and 5 had percentage yes and No as expressed in the table as 80% against 20%, 90% against 10%, 85% against 15%, 95% against 5% and 98% against 2%. This is indicative that there are no management strategies adopted in the maintenance of ICT infrastructure in various polytechnics in Rivers State.

### DISCUSSION OF FINDINGS

Findings obtained from the study showed that ICT infrastructures in polytechnics in Rivers State are outdated, ICT infrastructures do not have enough rooms and ICT Infrastructure are below international standards.

Also, ICT infrastructure in polytechnics are poorly maintained, there are no facility maintenance program for ICT facility, the school management do not have budget for facility maintenance for ICT units, ICT facility do not go through scheduled routine maintenance exercise and ICT facilities in most polytechnics do not have designated management forecast and program on its futuristic design.

### CONCLUSION

The study showed that polytechnics in Rivers State have poor ICT infrastructures and there are no management strategies adopted in the maintenance of ICT infrastructure in various polytechnics in Rivers State.

### RECOMMENDATIONS

Finally, it was recommended that the school management in the various polytechnics should set up adequate maintenance and development plan for their ICT facilities. This aid the system to carry out many task in their institutions including digital learning system.

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