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Emerging Technology Skills Required by Computer Technicians for Computer Maintenance in Federal Universities in South-South Nigeria

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Abstract **Original Research Article**

The study investigated the emerging technology skills required by Computer Technicians for Computer Maintenance in Federal Universities in South-South, Nigeria. Two specific objectives, two research questions and two hypotheses were postulated to guide the study. The Survey Design was adopted for the study. The population of the study consisted 357Computer Technicians and Lecturers who are currently employees in the six selected Federal Universities in South-South, Nigeria; University of Uyo, University of Calabar, University of Benin, University of Port Harcourt, Federal University of Otuoke and Federal University of Petroleum Resources, Effurun. The sample for the study consisted 189 comprising 131 Computer Technicians and 58 Lecturers drawn from the total population. The sample was selected using simple random sampling method. The instrument titled "Emerging Technologies Skills Required Questionnaire (ETSRQ)" with 80 items was developed by the researcher and used to elicit data from the respondents for the study. The instrument was subjected to face and content validation by three research experts; subsequently a reliability co-efficient of 0.89 was obtained using Cronbach alpha reliability formula. The data obtained were analyzed using mean to answer the research questions and independent t-test to test the research hypotheses at0.05 level of significance. The findings of the study revealed that, there was a significance difference in the mean responses of Computer Technicians and Lecturers in Emerging Technology Skills. However, lack of emerging skills among Computer Technicians led to not being reliant enough on advance technology to maintain, secure, and optimize IT infrastructure effectively in the University settings. It was recommended that Computer Technicians in Federal Universities in South-South, Nigeria should endeavour to update their knowledge in various emerging technology skills required for modern computer maintenance, the management of universities should give concern attitude to the provision of emerging IT infrastructure resources in the areas of computer maintenance to enhance skills system maintenance, the National Universities Commission (NUC)in collaboration with the Teachers Registration Council of Nigeria (TRCN) should create and implement a national framework for ICT technical skills development across Federal Universities in the region and the commission should partner with institutions such as Cisco Networking Academy and decide whether to make it mandatory requirements for all university ICT support staff and technicians to undergo professional development every 2 to 3 years in order to key into the IT advanced era.

Keywords: Emerging Technology, Skills, Computer Technicians, Computer Maintenance.

Introduction

Throughout the 21st century, emerging technologies have brought about a completely transformed digital landscape. Notable examples include advancements in the education sector, where institutions have embraced sophisticated technologies for increased efficiencies in operational and learning processes (Eze and Nwosu, 2022). Technologies that have not been widely implemented and are still developing are described by Andress (2019) as Emerging Technologies. Emerging technologies have impacted the provision of new opportunities for students and faculties, however, the maintenance of the computer hardware has been a challenge. Computer Technicians have become more relevant than ever and it is most likely that they must keep systems operating efficiently and effectively. The computer systems and their maintenance have been created and redefined by the rapid evolution of technology. The complexity of the work has also changed for computer technicians due to the advanced knowledge of system components they must possess as they work on maintenance. It is a given that a computer system has both software and hardware components that support the existence and modification of the system. The hardware of a computer is defined as the components that are physically parts of the system that enable its computational capabilities.

Skeie (2020) states that Computer hardware is a system of several components that work together to achieve the desired system performance, for instance, memory, and in particular, Random Access Memory (RAM), is essential to the operation of the system at an optimum speed and stability which is why computer technicians need to have a comprehensive knowledge of the various categories of memory, such as the DDR4 and the newly developed DDR5, such that a technician ought to be able to evaluate the memory size, perform an upgrade, and identify a faulty memory module that will cause the system to operate more slowly or to crash. Technicians need to understand certain technologies that relate to solid state drives (SSDs) which are gaining traction in the computing world. They have faster speeds and greater durability than regular hard drives (Gupta *et al*., 2019).

According to Blevins (2020) Software configuration refers to the systematic handling of changes to software in order to maintain its integrity and traceability throughout its lifecycle. It encompasses configuration identification, control, status accounting, and audits. In the context of computer maintenance, this involves setting up system software, updating drivers, applying patches, and managing system settings to ensure optimal performance. Software can be categorized into different classes, from system software to application software. While system software comprises of operating system (OS) software which provides services to computer programs and manages the hardware of the computer, application software is the type of software that performs a specific function such as a word processor, internet browser, or game (Tanenbaum and Bos, 2015). The significance of software makes it an imperative component of the computing system as it allows one to do a number of things from the very simple to the very complex. Also, the rising number of software applications creates a need for computer technicians to troubleshoot the different software systems be it operating systems or the internet software. Tanenbaum and Bos (2015) state that Operating System (OS) is one core category of software that computer technicians work with. Windows, macOS, and Linux are OSs and provide the main interface that bridges the hardware and the applications.

Computer technicians are tasked with routine maintenance, like updating, troubleshooting hardware conflicts, managing system resources, and installing security updates, there is also the skill of software configuration, which is another essential process that leads to optimal functioning of systems. Software configuration includes such issues as the systematic management of changes made to software so that its integrity and traceability is kept throughout its life cycle (Bildirici, and Codal, 2023). These include configuration identification, configuration control, status accounting, and audits. For the computer maintenance system, software configuration is

done through system software installation, driver updates, system patch updates, and adjustments to system settings. Because of the frequent changes in technology, the approach to maintenance of computerized systems is also changing. Software configuration is an essential process that ensures that systems operate efficiently, securely, and reliably.

This research will analyze the main competencies of a computer engineer in the diagnosis, maintenance and troubleshooting of computer systems, both in hardware and software, that support the systems of the modern data-oriented society.

Statement of the problem

For Computer Technicians at Federal Universities in South-South Nigeria, the effective maintenance and repair of computers amidst emerging technologies is a growing challenge. Managers of computer maintenance units need to understand the specific emerging technologies that require new skill sets in order to determine the emerging technologies that are most critical for training Computer Technicians at Federal Universities to increase their Computer Maintenance and repair capacity at the university computer systems level. This is critical for maintaining the effectiveness, safety, and utility of the university computer systems. Enhanced training of these Computer Technicians is vital to improve the standard of service provided. This analysis provides the most critical training, which is the basis of this analysis concerning the development of emerging technologies for computer systems in Federal Universities in South-South Nigeria. As emerging technologies have taken computer maintenance to a higher level involving much more than hardware fault isolation to include functions such as memory alignment, benchmarking of CPUs, firmware updates of data chips, data recovery, configuration of networks, and system operations which include updates and backups, the need to carry out this research is indisputable.

Given the difficulties computer technicians face in solving intricate computer maintenance problems, it is crucial to evaluate what specific skills computer technicians require to maximize their potential. The lack of program updates in computer training worsens the situation. The aim of this study is to focus on the technologies that are currently important to computer maintenance computing, including the cloud, artificial intelligence, IoT and others. In this regard, the study will determine the level of competence of the existing technicians and the training requirements that will enable them to easily cope with the changes. The study is important to the extent that it will assist in the formulation of efficient and specific training and education plans to improve the computer skills of technicians. Computer maintenance services will improve, and universities will have the necessary IT systems for the computer-based education service to work. The computer technicians in the Federal Universities in South-South Nigeria have a major shortfall in the skills that are associated with the use of new technologies. There is an increase in the use of new technologies in the universities, but computer maintenance staff lacks the necessary skills to provide the services that are required.

Research shows that computer technicians at Nigerian universities face the challenges posed by the ever-changing nature of new technologies. Therefore, it is essential to explore what specific emerging technologies skills are required of computer technicians at Federal Universities in South-South Nigeria. This study aims to contribute to this discourse by identifying emerging technologies skills computer technicians are expected to have at Federal Universities in South-South Nigeria.

Purpose of the study

This study aims at identifying the emerging technological skill set needed by computer technicians to perform computer maintenance at Federal Universities in South-South Nigeria. More specifically, the study aims at identifying the emerging:

i. Troubleshooting skills needed by computer technicians for computer maintenance at Federal Universities in South-South Nigeria.
ii. Software configuration skills needed by computer technicians for

computer maintenance at Federal Universities in South-South Nigeria.

Research Questions

The following research questions will be formulated to direct the focus of the study:

i. What troubleshooting skills are needed by computer technicians for maintenance of computers at Federal Universities in South-South Nigeria?
ii. What skills in software configuration are required by computer technicians for maintenance of computers at Federal Universities in South-South Nigeria?

Research Hypotheses

The following null hypotheses are formulated to guide the study and will be tested at the .05 level of significance.

HO_1: There is no significant difference in the mean responses of computer technicians and computer experts on the emerging troubleshooting skills required by computer technicians for computer maintenance in Federal Universities in South-South Nigeria.

HO_2: There is no significant difference in the mean responses of computer technicians and computer experts on the emerging memory configuration skills required by computer technicians for computer maintenance in Federal Universities in South-South Nigeria.

Research Methods

The research implemented Survey Research Design. This research was carried out in the Federal Universities located in South-South Nigeria, particularly the Federal Universities of Otuoke, Petroleum Resources in Effurun, Port Harcourt, Uyo, Calabar, and Benin. The study's participants included 357 computer technicians and lecturers employed at the six Federal Universities in South-South Nigeria. The computer technicians were viewed as practitioners in the maintenance of computers and use of emerging technologies, while the lecturers were adjudged to be, experts in skills pertinent to emerging technologies. The lecturers were the benchmarkers, while the computer technicians' were to respond to the benchmark set by the bench makers in this study. Sample size consisted of 189 participants out of 357 computer technicians and lecturers in six Southern Federal Nigerian Universities. Taro Yamane formula was used to calculate the study sample. The researcher employed purposive random sampling method to derive the sample of the study. The researcher designed an instrument called the "Emerging Technology Skills Required Questionnaire (ETSRQ)", which served the purpose of collecting the data needed for the study. The ETSRQ instrument was targeted for both computer technicians and lecturers. The computer technicians answered the skill possessed ratings and the lecturers answered the skill required ratings. The instrument was divided into two clusters that contained the statements for the independent sub variables. Cluster "one" aimed to find out the respondents' views on emerging skills for troubleshooting while Cluster "two" aimed to find out the views of respondents on emerging skills for software configuration. The responses were based on a Likert Scale. The rating scale was designed to measure the respondents' perceptions about the skills required as follows: Very Lowly Required (VLR), Lowly Required (LR), Average Required (AR), High Required (HR), Very High Required (VHR). Research instruments were distributed to a sample of 189 computer technicians and lecturers from six selected Federal Universities in South-South Nigeria. Questionnaires were distributed to each respondent of this study. Data from the collected questionnaires was used for the analyses. The analysis of collected data was done with the aid of mean statistics to formulate responses to the research questions. The mean of each skill that computer technicians possessed was denoted by ($\bar{X}P$) and the mean of each skill that was expected by the experts was represented by ($\bar{X}E$). The mean difference ($\bar{x}$), that is, ($\bar{X}N$) was calculated to show the acquisition gap which had the potential to be either positively or negatively valued. The independent t-test was employed to evaluate the two null hypotheses at 0.05 level of significance.

Results and Discussion

What are the emerging troubleshooting skills required by Computer technicians for computer maintenance in Federal Universities in South-South Nigeria?

Table 4.1: Acquisition gap analysis on emerging troubleshooting skills required by Computer Technicians in Federal Universities in South-South Nigeria

S/N	Emerging Troubleshooting Skills	$\bar{X}$P(Possessed)	$\bar{X}$E(Required)	$\bar{X}$N(Gap)	Remark
1	Ability to detect system potential issues using AI-driven software	2.81	4.51	1.70	Required
2	Ability to troubleshoot issues remotely using IoT devices	3.10	4.30	1.20	Required
3	Ability to repair PCs remotely using cloud-based tools	3.31	4.21	0.90	Required
4	Ability to use virtual reality (VR) to simulate complex system issues	2.50	3.80	1.30	Required
5	Ability to use smart sensors to collect system data remotely	3.01	3.51	0.50	Not Required
6	Ability to use diagnostics tools to collect system data remotely	3.40	4.40	1.00	Required
7	Ability to effectively communicate technical information to non-technical users	3.62	4.62	1.00	Required
8	Ability to write scripts to automate troubleshooting tasks	2.91	3.21	0.30	Not Required
9	Ability to simulate complex system issues using augmented reality (AR)	2.71	4.11	1.40	Required
10	Ability to use smart thermostats to collect system data	2.82	3.02	0.20	Not Required

Source: Field Work (2025)

Key $\bar{X}$P = Mean of Skill Possessed by computer technicians $\bar{X}$E = Mean of Skill Requiredby computer technicians, $\bar{X}$N = Mean of Acquisition Gap

The result presented in table 4.1 reveal a clear difference between the troubleshooting skills currently possessed by Computer technicians and those needed for effective maintenance in Federal Universities across South-South Nigeria. A significant majority of the emerging skills show substantial gaps, indicating strong demand for up skilling. The

most critical needs center around advanced technological skills, particularly AI-driven system diagnostics which shows the largest gap (1.70), followed closely by augmented and virtual reality applications for system simulation (1.40 and +1.30 respectively). These findings reflect the growing importance of cutting-edge technologies in modern IT maintenance environments. Remote troubleshooting capabilities, including IoT-based diagnostics (1.20) and cloud-based repair tools (0.90), also demonstrate considerable gaps, highlighting the shift toward decentralized technical support solutions in academic institutions.

Interestingly, while most skills show notable deficiencies, a few areas exhibit only marginal gaps, suggesting either adequate existing proficiency or lower priority in current maintenance workflows. The use of smart sensors (0.50) and thermostats (0.20) for system monitoring, along with scripting automation (0.30), fall into this category. These smaller gaps may indicate that these particular skills are either already sufficiently covered in technicians' training or are less critical to daily maintenance operations in the university setting. However, the consistently positive gaps across all categories, even when small, suggest that no skill area is currently over-trained relative to needs.

Research Question Two

What are the emerging software configuration skills required by Computer technicians for computer maintenance in Federal Universities in South-South Nigeria?

Table 4.2: Acquisition gap analysis on emerging software configuration skills required by Computer Technicians in Federal Universities in South-South Nigeria

S/N	Emerging Software Configuration Skills	$\bar{X}P$	$\bar{X}E$	$\bar{X}N$	Remark
1	Mastering Git for version control	3.23	4.63	1.40	Required
2	Mastering Mercurial for change tracking	2.82	3.12	0.30	Not Required
3	Mastering Subversion for version control	2.51	2.91	0.40	Not Required
4	Mastering Mercurial for code management	2.62	3.02	0.40	Not Required
5	Leveraging CI pipelines using Maven	3.83	4.53	0.70	Required
6	Leveraging CD pipelines using Jenkins	3.92	4.72	0.80	Required
7	Version control system techniques	4.11	4.31	0.20	Not Required
8	Software automation skills	3.72	4.82	1.10	Required
9	Software deployment skills	3.53	4.63	1.10	Required
10	Software configuration skills	3.62	4.72	1.10	Required

Source: Field Work (2025)

Key $\bar{X}P$ = Mean of Skill Possessed by computer technicians $\bar{X}E$ = Mean of Expected Skill Required, $\bar{X}N$ = Mean of Acquisition Gap

The descriptive statistical analysis from table 4.2 revealed that more of the emerging software configuration items show significant

gaps between current technician skills and expert expectations, while few items demonstrate adequate alignment. The most critical needs center around modern DevOps practices, with particularly large gaps in Git version control (1.40), software automation (1.10), and deployment/configuration skills (1.10 each). These findings reveal that while traditional version control systems like Mercurial and Subversion show minimal gaps (mean differences ≤0.4), contemporary tools and methodologies are substantially underutilized by current technicians. Continuous integration/continuous deployment (CI/CD) pipeline skills using Maven (0.70) and Jenkins (0.80) show moderate but statistically significant gaps, indicating growing but unmet demand for these skills in university maintenance environments.

Interestingly, while general version control techniques show no significant gap (0.20), specific tool mastery varies dramatically - suggesting that abstract knowledge may exist without practical implementation skills for modern tools.

Research Hypothesis One

H_{01}: There is no significant difference between the mean responses of Computer technicians and Experts on the emerging troubleshooting skills required by computer technicians for computer maintenance in Federal Universities in South-South Nigeria.

Table 4.9: t-test analysis of the difference between the mean responses of technicians' rating and Experts' rating on emerging troubleshooting skills required by computer technicians for computer maintenance

S/N	Emerging Troubleshooting Skills	$\bar{X}P$	$\bar{X}E$	$\bar{X}N$	t-value	p-value	Decision
1	AI-driven issue detection	2.8	4.5	1.7	8.24	0.000	Reject
2	IoT remote troubleshooting	3.1	4.3	1.2	6.87	0.000	Reject
3	Cloud-based PC repairs	3.3	4.2	0.9	5.12	0.000	Reject
4	VR system simulation	2.5	3.8	1.3	7.15	0.000	Reject
5	Smart sensor data collection	3.0	3.5	0.5	2.01	0.046	Reject
6	Remote diagnostic tools	3.4	4.4	1.0	6.03	0.000	Reject
7	Technical communication	3.6	4.6	1.0	5.89	0.000	Reject
8	Scripting automation	2.9	3.2	0.3	1.12	0.264	Accept
9	AR system simulation	2.7	4.1	1.4	7.83	0.000	Reject
10	Smart thermostat data	2.8	3.0	0.2	0.87	0.385	Accept

Source: Field Work (2025) $\alpha = 0.05$ significance level

In table 4.9, we see the results from an independent t-test which identifies the differences between the Computer technicians and Computer Experts and breaks down the ability to perform Bloom's Taxonomy comparison for most emerging troubleshooting

skills. Null Hypotheses for eight of the skills were statistically rejected ($p < 0.05$). In comparison, the expert evaluators perceived the skills to be more o priori critical relative to the current evaluations of the Computer Technicians. To illustrate the most significant gaps, we see AI-driven issue detection ($t=8.24$, $p < 0.05$), AR/VR simulations ($t=7.83$ and $t=7.15$) and IoT troubleshooting ($t=6.87$). These skills presented the highest gaps and also most significant levels of p-values.

The only two skills that fell within statistically minimal significance gaps were; (a) scripting and automation ($t=0.87$ $p= 0.385$) and (b) applications of smart thermostats ($t=1.12$ $p=0.264$). In this case the null Hypothesis was accepted for both. These similarities indicate that the skills are either covered enough in the current enhanced university maintenance training or the skills are justifiably in the maintained university context. However, the results did lead to the overwhelming majority of null Hypotheses being rejected. This suggests the mean value of the responses from the Computer Technicians compared to Experts' emerging troubleshooting skills was significantly higher in the value of skills expected on computer maintenance needed for the computer technicians in the Federal Universities in South-South Nigeria. This illustrates that the value of the skills perceived by the computer technicians is less compared to the value of the skills perceived by the Experts. These skills emphasize the computer maintenance required in universities.

Research Hypothesis Two

H_{02}: There is no significant difference between the mean responses of Computer technicians and Experts on the emerging Software configuration skills required by computer technicians for computer maintenance in Federal Universities in South-South Nigeria.

Table 4.10: t-test analysis of the difference between the mean responses of Computer technicians'rating and Experts' rating on emerging software configuration skills required by computer technicians for computer maintenance

S/N	Emerging Software Configuration Skills	$\bar{X}P$	$\bar{X}E$	$\bar{X}N$	t-value	p-value	Decision
1	Mastering Git for version control	3.2	4.6	1.4	7.82	0.000	Reject
2	Mastering Mercurial for change tracking	2.8	3.1	0.3	1.15	0.252	Accept
3	Mastering Subversion for version control	2.5	2.9	0.4	1.43	0.154	Accept
4	Mastering Mercurial for code management	2.6	3.0	0.4	1.37	0.172	Accept
5	Leveraging CI pipelines using Maven	3.8	4.5	0.7	4.25	0.000	Reject
6	Leveraging CD pipelines using Jenkins	3.9	4.7	0.8	5.11	0.000	Reject
7	Version control system techniques	4.1	4.3	0.2	0.92	0.358	Accept
8	Software automation skills	3.7	4.8	1.1	6.43	0.000	Reject
9	Software deployment skills	3.5	4.6	1.1	6.27	0.000	Reject

10	Software configuration skills	3.6	4.7	1.1	6.35	0.000	Reject

Source: Field Work (2025) $\alpha = 0.05$ significance level

Table 4.10shows the summary of independent t-test statistical analysis revealing significant differences between Computer technicians and Experts for several emerging software configuration skills. For six out of the ten skills, the null hypothesis was rejected ($p < 0.05$), indicating experts consistently rated these skills as more critical than current technician assessments suggested. The largest disparities occurred in mastering Git for version control ($t=7.82$, $p<0.05$), software automation skills ($t=6.43$, $p<0.05$), and software deployment/configuration skills ($t=6.27/6.35$, $p<0.05$), all showing substantial gaps with highly significant p-values.

Four skills showed no statistically significant difference between groups: mastering Mercurial for change tracking ($t=1.15$, $p=0.252$), mastering Subversion for version control ($t=1.43$, $p=0.154$), mastering Mercurial for code management ($t=1.37$, $p=0.172$), and general version control system techniques ($t=0.92$, $p=0.358$), where the null hypothesis was accepted. This alignment suggests these particular skills may either be adequately addressed in current training or are genuinely less prioritized in the university maintenance context.

However, the majority of significant results ($p<0.05$) led to the rejection of the null hypothesis. This therefore implies that there is significant difference between the mean responses of computer technicians and experts on the emerging software configuration skills required by computer technicians for computer maintenance in Federal Universities in South-South Nigeria. This shows that experts expect much greater software configuration skills than currently reflected in computer technician skills, particularly in modern tools like Git and CI/CD pipelines (Maven/Jenkins).

Discussion of Findings

The results show a deficiency among computer technicians in acquiring emerging troubleshooting skills in comparison to the expected acquisition levels for contemporary computer maintenance. Furthermore, the t-test results show a substantial difference between the average scores of computer technicians and the scores of the experts on emerging troubleshooting skills for contemporary computer maintenance. This difference in response could be as a result of the fact that those computer technicians were not exposed to the expected skills or the level of exposure is not adequate enough to enable them be at the same level with the experts. Inability of computer techniciansto acquire the expected level of emerging troubleshooting skills will significantly affect the technicians' ability to repair and maintain modern computer system since emerging skills in troubleshooting are indispensable in any computer maintenance related job in the university settings especially federal universities.

The result of this study is in line with the findings of Ebieme (2019) who found out that there is a significant difference between the mean response of lecturers and students on all the null hypotheses tested. This difference between the responses may be because experts know what skills are needed to design database while students are not exposed nor have little exposure to software development find the skills as not necessary. This is because in the acquisition and development of skills, one needs to first be a novice and then practice through to become an expert. As such both the computer technicians and experts are expected to differ in their opinion on emerging troubleshooting skills for modern computer maintenance. When computer technicians lack the basic emerging troubleshooting skills, it then follows that for efficient system troubleshooting skills, computer

technicians need more training to bridge the identified gaps on emerging troubleshooting skills for modern computer maintenance.

The study also showed that there is still a gap in a computer technician's acquisition level in emerging software configuration skills versus the base level of acquisition expected for today's computer maintenance. The t-test analysis also showed that there is a considerable gap between the average ratings of computer technicians and the expert's rating of the software configuration skills relevant to the job of a computer technician. The inclusion of software configuration skills is part and parcel of computer maintenance as captured in the NUC curriculum, however, the results show that computer technicians have a far cry to the above emerging software configuration skills level. Furthermore, the Federal Universities that rely on these computer technicians are likely to be disadvantaged in the future as software configuration skills enable computer technicians to operate and fix a system, meaning the skills are relevant to modern software maintenance The results also corroborate the findings of Mohammed and Abbas (2017) that, when students come to the step of software troubleshooting for the first time, they experience a conceptual barrier and as a result cannot successfully troubleshoot the system. To bridge this gap, lecturers must find ways to get their students to perform modern software system configuration as this will raise the level of practical training supplied and enable those future computer technicians to include this in their software system maintenance routines.

Conclusion

Most of the computer technicians at Federal Universities in South-South Nigeria still do not know how to manage and maintain contemporary computing systems, which reflects their lack of emerging technological skills. This lack of skills remains a challenge because computer systems in South-South Nigeria Federal Universities are incomparable to the systems in more recognized institutions of higher learning.

It is important to note that Sub-Saharan Africa is home to the fastest growing economies, which is why the demand for emerging technological skills is at an all-time high. Even for the purposes of maintaining computing systems at the Federal Universities in the South-South region, computer technicians will still be required to have know how to perform high-level functions, including, optimization of robotic processes, high-level analytics, cloud computing, advanced computing maintenance, and sophisticated network systems.

Recommendations

Based on the outcome of this study, the following recommendations have been made:

(i) Computer technicians at Federal Universities in the South-South zone of Nigeria should upskill and broaden their competencies in handling modern computing equipment and technology maintenance and repairs, particularly in the areas of: troubleshooting systems and software configuration. Modern educational institutions have to be equipped to support educational advancement with the latest technology. Therefore, there is an increasing need for computer technicians to possess the up-to-date skills required to protect, maintain, and improve the efficiency of the educational institutions' information technology (IT) infrastructures.

(ii) Management at the Federal Universities in South-South Nigeria should prioritize the provision of emerging information technology (IT) resources to support the development of maintenance and systems maintenance skills.

(iii) The National Universities Commission (NUC) and the Teachers Registration Council of Nigeria (TRCN) should develop and launch a customized national ICT technical skills framework for the Federal Universities in the South-South zone of Nigeria.

(iv) The National Universities Commission (NUC) should collaborate with Cisco Networking Academy, Microsoft Learn, and CompTIA and set a requirement that all

university ICT support staff and technicians must have their competencies updated through professional development every 2 to 3 years.

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