

# Electronic Administration and Service Delivery in Selected Public Tertiary Institutions in Anambra State

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**Abstract:** The study is an investigation into the implications of electronic administration on service delivery at selected public tertiary institutions in Anambra State. Four randomly selected institutions - The Nnamdi Azikiwe University, Awka, Chukwuemeka Odumegwu Ojukwu University, Federal Polytechnic Oko and Federal College of Education (Technical) Umunze were studied. The research was anchored on the platform of the New Public Management Theory which advocated for a swifter and more result oriented management method. Data for the study were generated via a structured questionnaire distributed to staff and students of the selected institutions under study. Observation method was also employed. Data collected were analyzed in frequency tables and percentages while the hypotheses were tested using ANOVA and t-test regression analysis. The study revealed that most tertiary institutions in Anambra have adopted and integrated e-administration into various areas of their management which have also improved service delivery to some reasonable extent. However, full benefits of this new management technique are not realized due to some undermining factors essentially bordering on low level of technological development in the country. The challenges include internet hiccups, power outage, poor maintenance culture, illiteracy, and integrity issues. The research therefore calls for the intervention of government (via funding and logistic supports) at all levels to assist tertiary institutions to fully adopt and integrate e-administration in all needed areas of their management.

**Keywords:** Administration, Tertiary institutions, examinations, Service delivery

## 1.1 INTRODUCTION

The 21<sup>st</sup> century has witnessed tremendous advancements in technology and this has far reaching implications on the administration and management of all sectors, particularly the education sector. The adoption and integration of electronic administration, that is, the application of information and communication technology (ICT) in all areas of administration for the main purpose of improving upon the delivery of public services is paramount in academic institutions. It addresses the problems associated with the traditional method of carrying out administrative and ancillary functions of day to day activities. As an alternative management framework, e-administration can reduce the cost of administration, improve transparency and speed, optimize the institutions objective function and access to data and information needs of the community (Joshua, Joshua & Ikiroma, 2014; Sediky, 2015; Abdulkadir, 2017).

The way in which the functions of service delivery are performed at the tertiary institutions have undergone changes over time. Earlier, service delivery was carried out in traditional or old manner characterized by highly bureaucratic method with much paper based long procedures. This method gave rise to the delay in services, poor quality services, lack of transparency and much room for corruption (Arkes, 2015; Amukugo & Peters, 2016). Massive complaints by graduated students, retired staff and other stakeholders have been recorded on the status of service delivery in public institutions especially in Nigeria. With the old or traditional method, administrative functions are not carried out in the most effective and efficient manner. The process of admission for instance, requires that applicants should travel from their various homes to the institutions to purchase, fill and submit forms along with the relevant documents. The process therefore distorts the smooth operations of the entire institution and has adversely affected the efficient service delivery to the citizens (Mormah, 2014; Eneh, 2015).

Electronic administration (e-administration) is an aspect of electronic governance. E-governance was introduced in Nigeria with the formulation of the Nigerian National Policy for Information Technology in March, 2001. The cardinal objective among others was to improve the accessibility of public administration to all citizens, to bring transparency to governmental processes and also by utilizing Information and Communication Technology (ICT) opportunities, restructure government, citizens and business interface for a better governance and effectiveness (FRN, 2001). Electronic administration entails changing the power of equation on access and control to information and knowledge. Osakede, Ijimakinwa, Arijeniwa, Adesanya, & Ojo (2017), stated that digital administration will ensure that the staff are no longer passive in the discharge of their duties but will play a meaningful role in decision making. It will serve as a critical strategy for tertiary institutions in offering affordable, efficient and flexible learning environment for rapid growth. The need for educational administrators in Nigerian tertiary institutions to acquire and use ICT skills cannot be ignored. E-administration enhances organizational productivity and efficiency in service delivery. E-administration offers the platform for which good governance can be accessed. It has the capacity of increasing the involvement of staff and other stakeholders in the administrative process at all levels.

The Federal government of Nigeria in a bid to achieve the objectives of e-administration established the National Information Technology Development Agency (NITDA) under the supervision and co-ordination of the Federal Ministry of Science and Technology in April 2001. The National Information Technology Act which gave effect to the above mandates the government to create a framework for the planning, research, development, standardization, application, co-ordination, monitoring, evaluation and regulation of information technology practices, activities and systems in Nigeria (NITDA, 2001). Furthermore, the tremendous growth in higher education sector which has made the administration of institutions complex requires that these institutions should explore alternative means of administration that may be faster, more transparent and result-oriented. The above is also in line with the objectives of the National University Commission (NUC) and other regulatory bodies in Nigeria (NUC, 2014).

Sequel to the above, most tertiary institutions in the country are rapidly keying into the use of information communications technologies (ICTs) in their management, teaching, learning and research. Several challenges have also been encountered in the process among which are poor electricity supply for adequate operation and maintenance of ICT equipment, poor network services, inadequate fund, low ICT literacy rate, digital divide, inadequate government policy and support, to mention but a few. These problems impact on all aspects of institutions' administration and the need for improvement is imperative. This work therefore is an investigation into the implications of electronic administration on service delivery at selected tertiary institutions in Anambra State.

## 1.2 STATEMENT OF THE PROBLEM

Tertiary institutions across the globe deliver one form of service or the other to the members of their immediate communities and beyond. Service delivery by tertiary institutions cut across teaching, learning, research and is spearheaded and co-ordinated by the management through the administration of their day to day activities. E-administration has over the years gained its course in Nigerian higher institutions mainly because of the mandate by regulatory bodies like the National University Commission (NUC) and the National Board for Technical Education (NBTE) that tertiary institutions should be assessed and ranked through the level of functionality of their websites; network structures, associated academic portals and overall ICT compliance. Many institutions have now keyed into the global demand of Information and Communication Technology application, though with several challenges that consequently leave stakeholders highly dissatisfied.

Most of the tertiary institutions in Anambra state for instance have adopted the online admission process for enrolling prospective candidates but the exercise has not been as seamless as expected. Most of the new entrants are novice in ICT education and sometimes get frustrated trying to process their admission online. Furthermore, poor internet services and information infrastructure as well as low level of technological development in the country have made accessibility a big challenge. Also the conduct of examinations via computer-based testing method which most tertiary institutions already adopted is not without challenges. Inadequacy of functional computers in the institutions, power outage, faulty monitors, integrity of examination managers and low literacy rate are some of the problems that undermine the effectiveness of the CBT programme. Students have leveraged on this and still engage in all forms of examination malpractices. There are cases where students go into the examination hall and write for themselves and their friends without being caught.

Also of note are the problems associated with online payment of fees. Unnecessary delays caused by poor network services, excess charges via remita generation and other banks charges sadly make e-payment more costly. There are also problems of inadequate capital, lack of training for staff and students, high cost of maintaining ICT infrastructure, poor acceptability of the new process, absence of policy framework and vandalization of ICT equipment which further made the adaption and integration of e-administration a herculean task. The above challenges have far reaching implications on almost all aspects of educational administration and consequently service delivery. Having noted these challenges, the researcher intends to examine the level of adoption and integration of electronic administration in the management of tertiary institutions in Anambra state and the effect on service delivery. The study also intends to discover ways e-administration could be strengthened to enhance efficiency so that these institutions will remain centers of intellectual excellence in the global setting. The study examined how the components of e-administration (automated admission processes, computer-based testing method of examination, ICT and online payment of fees) have impacted on service delivery (registration exercise, examination management, routine administration and financial probity) in the institutions.

## 1.3 OBJECTIVES OF THE STUDY

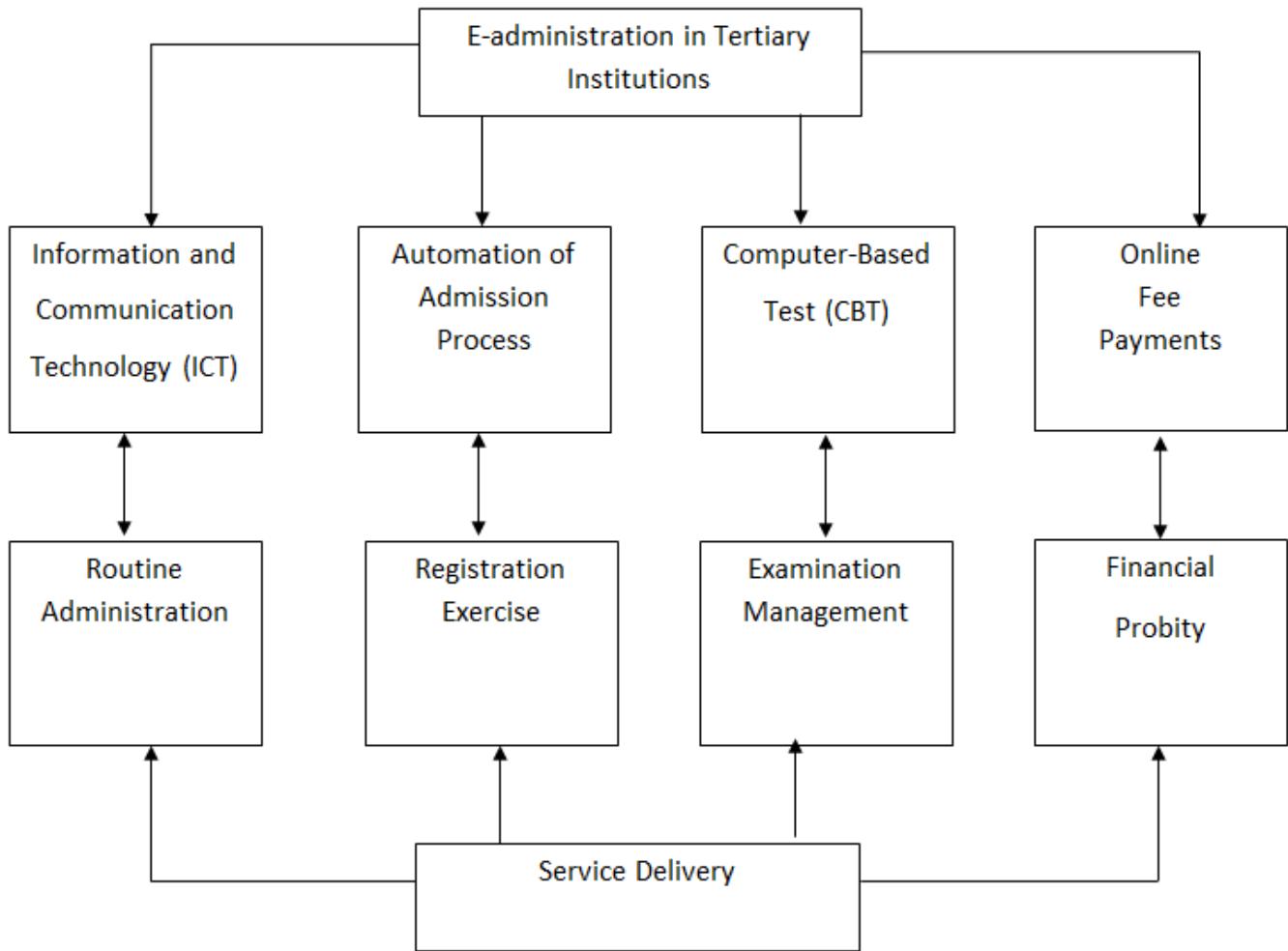
- i. To examine the extent to which the automation of admission processes has enhanced registration exercises in tertiary institutions in Anambra State.
- ii. To determine the extent to which ICT is used to effect routine administration in tertiary institutions in the State.

## 1.4 HYPOTHESES

- i.  $H_0$ : Computer-Based Testing (CBT) method is not utilized to improve examination management in the institutions.  
 $H_1$ : Computer-Based Testing (CBT) method is utilized to improve examination management in the institutions.
- ii.  $H_0$ : Online payment of fees has not enhanced financial probity in tertiary institutions in the State.  
 $H_1$ : Online payment of fees has enhanced financial probity in tertiary institutions in the State.

## 2.0 LITERATURE REVIEW

**Fig. 2.1:** Schematic Representation of the Conceptual Framework on Electronic Administration and Service Delivery in Tertiary Institutions in Anambra State



### 2.1.1 Electronic Administration

Hornby (2012) perceived administration as activities done in order to plan, organize and successfully run a business, an institution or an organization; that is, a process or act of organizing the way something is done. The administration of tertiary institutions refers to the means by which higher educational institutions are operated, organized and managed. Bleiklie (2007) asserted that the administration of higher educational institutions deals with how higher educational institutions steer themselves as well as the processes used to manage them in such away as to lead to effective performance in achieving desired outcomes, goals and satisfaction of stakeholders.

For conceptual clarification, e-administration is an aspect of e-governance, though in most cases, they are used interchangeably. When scholars therefore talk of e-governance in education sector, they are still referring to e-administration. For major reforms and developments in tertiary education to be significant, an improvement in Information and Communication Technology with its positive influence on teaching, administration and research technologies is inevitable. Also, a major tertiary education reform recommended by the World Bank (2002) was that there should be electronic networking involving e-mail communication capacities for teaching, learning, research, management, performance and monitoring of systems. It is imperative that at this junction, we should clearly state the meaning of ICT. Information and Communication Technology refers to technologies that provide access to information through telecommunication devices like computers, wireless networks, cellular phones, internet and/or other forms of electronic gadgets (Tech-Terms, 2010; Tech-Target, 2017).

According to Mormah (2014) e-administration is one of the knowledge explosions and it is all about a system of administration whereby the traditional art of initiating, planning, organizing, analyzing, directing, budgeting and coordinating of all factors of production to achieve organizational goals are electronically processed with little or no paper and stress of movement of files and documents from one office or table to the other. E-administration is an effective mechanism for achieving organizational objectives through the adoption of electronic devices in carrying out administrative functions of day-to-day activities.

In line with the trend of globalization through Information Communication Technology, tertiary institutions in Nigeria have adopted e-administration in the management of their affairs, ranging from web enabled admission processes and digitalization of entrance examination, learning and assessment process, library services, record management and payment systems. There are various components of the electronic administrative system, which has not been incorporated very well into the emerging e-administration of tertiary education management system in Nigeria. These components can immensely improve the e-administration practices in the institution management system. Memos-mails, for instance, are now expected to be distributed on-line instead of manual dispatch. Transcripts, verification, confirmation are expected to be done electronically. Others are payment of school fees payment through remita or e-transact, course registration and publication of in course examination results, e-documentation of students' academic records, Computer-Based Test, electronic library services and e-learning. In a nutshell, adoption of Information and Communication Technology into administration to enhance service delivery and transformational development equals e-administration.

### **E-administration in Tertiary Institutions**

All over the world, higher institutions play strategic roles in human capital formation. They are places where students get equipped with cutting-edge competences to compete in the ever-evolving globalised world and also be able to effectively manage the affairs of the nation in the future. Higher (tertiary) institutions are important because they supply the much-needed design, teaching and research. The scientific and technological advancement of a nation depends on the quality of graduates turned out by tertiary institutions. Also the development in indigenous technology and capabilities in agriculture, health, security and other sectors can be enhanced by services offered by tertiary institutions. They provide opportunities for lifelong learning, allowing people to upgrade their knowledge and skills from time to time based on societal needs (Shrivastava, Raizada & Saxena, 2014).

Today, the complexities and intricacies of managing tertiary institutions require an alternative and more efficient method of delivering services. The electronic administration ensures that services are delivered in the most efficient, cost effective and accessible manner. Tertiary institutions in Nigeria have not yet adopted and integrated e-administration into the services of all their departments and units. The next section will delve into the specific areas the institutions have adopted e-administration in their functions.

#### **2.1.2 Computer-Based Test (CBT)**

Testing in education sector has become one of the most important parameters by which a society adjudges the product of educational system. A reality that cannot be ignored is that no matter how lofty, how enviable, how laudable, how gigantic the education goals are, and how relevant the school curriculum is organized, if no provision is made for accurate evaluation and reportage of learning progress, all these efforts will amount to a wasteful venture (Duze, 2011). In the past, various methods were employed in examining the ability of an individual starting from oral to written, practical to theoretical, and paper and pencil to electronic. The predominant mode of students' assessment in Nigeria is the traditional method. In this method, students are assessed using pen on paper on their cognitive abilities. It's no longer news that the traditional methods of assessment in Nigeria is characterized by different forms of examination malpractices such as bringing in unauthorized materials, writing on currency notes and identity cards, spying on other candidates in examination hall, substitution of answer sheets and change of examination scores or grades. Others include, impersonation, body writing or tattoo in which students especially females write on hidden parts of their bodies (Mubashrah, Tariq & Shami, 2012).

Computer Based Assessment or e-assessment/testing is a method of administering tests in which the responses are electronically recorded, assessed, or both. According to Bennett (2015), computer-based test represents a modern way of answering an examination questions, replacing the written pen on paper format. CBT is a combination of networks, hardware and software as well as means of communication, collaboration and engagement that enables the processing, management and exchange of data, information and knowledge. It can be understood to be a complex of artificial techniques and knowledge for solving problems associated with marking pen on paper examination (Bennett, 2015).

Computer-based testing or computer-based assessment is seen as a catalyst for change, bringing about a transformation in learning, pedagogy and curricula in educational institutions. Computer Based Test (CBT) is a series of questions, problems, or practical tasks issued on a computer in order to gauge somebody's knowledge, ability, or experience. It is the use of computer

to issue questions to an examination candidate, allowing the candidate to give in answers through the computer and providing bases for evaluating the candidate (Alabi, Issa & Oyekunle, 2012).

Computer Based Tests are written to test specific levels of abilities; they have the potential to deliver more accurate and reliable results than traditional examination. Traditional methods of assessment are being changed by automated assessment and administrators of tertiary institutions across the globe are now migrating toward the use of CBT to test students' knowledge (Conole & Warburton, 2005).

### 2.1.3 Benefits of Computer Based Testing Method

Traditional Examination refers to a formal examination administered through question papers to which students respond in the form of written answers to a limited choice of previously unseen examination questions, set in advance and answered in examination centers where invigilators (examination supervisors) prevent communication between students and prohibit the use of notes or other revision aids (Harris, 2005). The paper and pen (manual) method of writing examination, which has been in existence for decades, may not be appealing for use because of the problems usually experienced including examination venue capacity constraints, lack of comfort for examination candidates, delay in the release of results, examination malpractices, cost implications of printing examination materials, taking advantage of candidates by the examiners, missing scripts/scores and human errors (Obasi, 2009 & Nwaorgu, 2012).

It has also been noted that in some occasions, many students often refuse to submit their answer scripts when it is obviously observed that they have not written well enough of what is required of them to pass the course. This often happens when the teachings and examinations are conducted with large number of students involved especially in general studies courses. Abubakar and Adebayo (2014) also observed that POP assesses students only on cognitive abilities while e-examination can be used to assess both cognitive and practical abilities. Cognitive abilities are assessed using e-testing software while practical abilities are assessed using e-portfolios or simulation software. Similarly, Obioma, Junaidu and Ajagun, (2013) opined that automated assessment if carefully designed can comprehensively and reliably assess students in the three domains (cognitive, psychomotor and affective) of learning.

Specifically, the benefits of computer based test spread across the shortcomings of paper based testing method. Olatoye (2014) itemized the benefits of CBT, which are:

- i. **Improved Measurement Precision and Efficiency:** The way to doing as such is, once more, the capacity of the computer to associate with and tailor itself to the understudy being tested. A CBT with these capacities is named versatile. As a versatile test continues, answers to prior inquiries figure out which inquiries are asked later. The test hence logically changes as the understudy's execution level is slowly uncovered.
- ii. **Increased Convenience:** A major benefit of computerized testing is operational convenience for students, test administrators, and those who use test scores. These conveniences include:
  - **Self-administering:** Regular paper-and-pencil tests for the most part oblige somebody to disseminate test booklets and answer sheets, monitor time points of confinement, and gather materials after the test closes. Overseeing a CBT can be as straightforward as stopping an understudy before a computer.
  - **Immediate Scoring:** The estimation of any data debases after some time. A score report based on a test taken a month and a half prior is a portrayal of what that understudy was instead of what she or he at present is. CBTs can address this qualification by giving understudies score reports endless supply of their test. The test can along these lines have moment effect. At the understudy level, this may include rapidly changing the instructional approach brought with a specific idea. At the school or local level, prompt data may permit comparative however more worldwide strategic movements.
  - **Integrated Information Administration Frameworks:** Testing on computer can enable scores to be entered naturally into classroom-, school-, region, or state level databases. Once there, different individual and total reports can without much of a stretch be created to condense and track the execution of individual understudies and characterized gatherings.
  - **Diagnostic Appraisal and Combination with Instructional Programming:** Self-delegating, prompt scoring, and simple information administration makes CBTs-versatile CBTs specifically-perfect for demonstrative or developmental appraisal. Consider the issue of evaluating an understudy's example of qualities and shortcomings over a genuinely wide substance space.

Furthermore, according to Abubakar and Adebayo (2014), advocates of CBT have identified many positive prospects of this approach to assessment as follows:

- i. More efficient than paper-based tests
- ii. Year-round testing
- iii. Flexible scheduling
- iv. Individualized testing environment
- v. Faster score reporting, within approximately two weeks of testing

- vi. Immediate viewing of scores on screen
- vii. Convenient to undergraduates, graduates, and the larger university community
- viii. Ability to access all tests that are demanded by students and the community at large
- ix. Worldwide testing opportunities for distance and traveling students
- x. Local and centralized registration and billing systems
- xi. Enhanced consistency and security.

#### 2.1.4 Examination Management

Examination management entails the whole process of administering examinations as well as preservation of results. It comprises of question paper delivery, response storage, marketing of responses, reporting of results from tests or exercises, collation, compilation and computation of results, etc. Assessments according to the NPE (2013) are designed for the following goals as provided in section 151(iv):

- i. To accurately measure the abilities of students;
- ii. Enhance the global competitiveness of the products of the Nigerian educational system;
- iii. Improve the credibility of examinations conducted in Nigeria;
- iv. Eliminate the intractable problems associated with the traditional paper pencil test (PPT); and
- v. Improve learning.

The foregoing enumerated goals demonstrate explicit realization by the chapters of the sixth edition of the National Policy on Education that the PPT is fraught with challenges that have insurmountable solutions (Onu, 2017). Consequently, the NPE (2013) recognized the benefits of using ICTs in examination management as a possible sustainable solution. It thus encouraged providers of all levels of education in Nigeria to migrate to the current and more sufficient way of testing by adopting electronic testing models

On section 151(C), the NPE was specific when it observed that in pursuance of the goals enumerated in section 151(i-v) as stated above, that all levels of education in Nigeria shall be encouraged to migrate to computer based testing mode of assessment ( Baker-Eleleth, Emeleth, O'Neill, & Stone, 2006; Fagbola, Adigun, & Oke, 2013; Fluck, Pullen, & Harper, 2009). Obviously, with the above provisions, management of tertiary institutions are fastly keying into the use of CBT in examination conduct assessment. The move is supposed to ensure academic integrity and quality assurance in the system.

#### 2.1.5 E-administration and Service Delivery

The major mandate of the tertiary institutions in Nigeria as defined by the National Policy on Education (2004) includes the provision of high level manpower for national development and this role is achieved through its programme of teaching, learning and research. In this 21<sup>st</sup> century digital age, nothing serious can be achieved without the help or input of Information and Communication Technology in tertiary institutions. All over the world, educational institutions are benefiting from shift from manual to ICT based service delivery. According to Chukwuemeka, Ubochi & Okechukwu (2017), this shift is essential because the use of ICT in work-related activities reduces waste of time, delays and mistakes on the part of workers in the discharge of their duties. There is no limit to the use of computers for educational administration.

E-Administration enables tertiary institutions to improve efficiency, reduce costs and improve on both formal and current service delivery systems (Danda, 2004). It also keeps storage requirements to a minimum. It allows data to be accessed by more than one person at a time. There is better security system. Data can be coded and require less workforce with fewer staff to enforce the system. In managing personnel electronically, database can be used to keep the students and staff information system. These records are then used to calculate the workers output and performance, the ready available data makes decision making easy and more efficient. A more informed administration is in a better position to understand and exercise its rights and e-administration will lead to reduction in knowledge gap on issues bordering on administration and quality assurance with regards to products. Digital administration will ensure that staff are no longer passive in the discharge of their duties, instead would decide on the kind of services they want and structure which could best provide the same (Sharma, 2010).

Tertiary institutions have introduced in different areas the use of electronic medium in the administration of their institutions. ICT have gained prominence globally in the area of information dissemination, teaching, learning, research and public service delivery. Its application according to Jude and Dankoro (2012) is pivotal to the technological advancement of any nation especially in the 21st century. As rightly captured by Edidiong, Nse, Iniobong and Eno (2015), the verdict is that ICTs revolution has brought in its wake education revolution that has changed the way services are rendered. In this direction, software programmes and specifically equipped computers are already providing learning opportunities that emphasize exploration, problem solving creativity and innovation techniques in libraries. Online applications allow users in remote and distant areas to access a wide variety of information resources and make use of advanced materials from digital libraries, power network enable users to interconnect videos, podcast and webs conferencing. Collapsing e-administration and service delivery as regards to tertiary education in Nigeria is accessing how the higher institutions use information communication technology in learning and administration for effective service delivery. The need for educational administrators in Nigeria tertiary institutions to acquire electronic literacy skills cannot be ignored, every modern administrator ought to acquire

knowledge and skill in information technology, and to use internet to browse to obtain or circulate information that will enhance organizational productivity and efficiency in their jurisdictions (Osakede, Ijimakinwa, Arijeniwa, Adesanya & Ojo, 2017).

### 3.0 METHODOLOGY

#### 3.1 Population of the Study

According to the data gathered from Academic Planning unit, Personnel, Records and Statistics departments at the institutions, the population of staff at Nnamdi Azikiwe University, Awka stand at 3,728 while the students are 28,812; Chukwuemeka Odumegwu Ojukwu University has 1511 staff strength, and 13,012 students. On the other hand, the staff population at the Federal Polytechnic, Oko stood at 1,967 and the students at 28,010 while Federal College of Education (Technical) Umunze has 613 staff and 7655 students. The breakdown of the staff and students' nominal roll is shown in table 3.1 below:

**Table 3.1: Population of the Study**

The table below shows the total population (Nominal Roll) of staff and students of the institutions randomly selected for the study.

Tertiary Institution	Students	Academic Staff	Non-Academic Staff	Total
<b>Nnamdi Azikiwe University, Awka</b>	28,812	1,274	2,454	<b>32,540</b>
<b>Federal Polytechnic, Oko</b>	28,010	567	1,400	<b>29,977</b>
<b>Chukwuemeka Odumegwu Ojukwu University</b>	13,012	584	927	<b>14,523</b>
<b>Federal College of Education (Technical) Umunze</b>	7,655	275	338	<b>8,268</b>
<b>Total</b>	<b>77,489</b>	<b>2,700</b>	<b>5,119</b>	<b>85,308</b>

**Source: Information from Personnel, Academic Planning, Records and Statistics Departments of the Institutions under Survey (November 2018)**

The total population of the study is therefore 85,308. The total population of students is 77,489, academic staff population is 2,700 while non academic staff is 5,119.

#### 3.2 Sample Size Determination and Sampling Technique

The study's population of 85,308 was too large; hence the statistical tool of Taro Yamane (1964) was used to obtain the sample size. Yamane's statistical formula for finite sample size determination is as follows:

$$n = \frac{N}{1 + (Ne^2)}$$

Where n = Sample size

N = Population size

e = Margin of error

1 = Remain constant.

With an error limit of 0.05 and the population size of 85,308 the sample size will thus be calculated as follows:

$$n = \frac{85,308}{1 + (85,308) \times (0.05)^2} = \frac{85,308}{1 + 85,308 \times 0.0025} = \frac{85,308}{1 + 213.27} = \frac{85,308}{214.27} = 398$$

The sample size to be used for this study will therefore be 398.

In determining the sample size for each component of the population, Bowley's proportionate allocation formula was used. This is given as follows:

$$nh = \frac{NHn}{N}$$

Where:

nh = Sample size allocated to each component unit

NH = Population size of each unit

n = Total sample size

N = Total population size

Therefore, the sample allocation to each unit of the sample was determined and presented on the table below:

**Table 3.2: Sample Size Determination**

**Sample size of the four selected institutions and their component units**

Tertiary Institution	Students	Staff	Total
<b>Nnamdi Azikiwe University, Awka</b>	132	19	<b>151</b>
<b>Federal Polytechnic, Oko</b>	130	10	<b>140</b>
<b>Chukwuemeka Odum. Ojukwu Uni</b>	60	8	<b>68</b>
<b>Federal College of Edu (T) Umunze</b>	33	6	<b>39</b>
<b>Total</b>	<b>355</b>	<b>43</b>	<b>398</b>

**Source: Researcher's Field Survey, 2019**

### 3.3 Methods of Data Collection

The research instrument employed in this study was the questionnaire. The questionnaire has three parts. Part A is the introductory letter, part B contains the demographic data of the respondents while the third part of the questionnaire is the actual questions which relates to the objectives, the proxies and variables of the study. The instruments for the students were randomly distributed to respondents irrespective of programme, class or sex while those for staff were taken directly to officers that perform electronically integrated functions, that is, officers at ICT centres, biometric data units, academic and administrative departments. The researcher was also privileged to visual data through observing the state and quality of facilities, equipment and infrastructure provided by the institutions to facilitate the adoption, integration and practice of e-administration at the institutions.

### 3.4 Reliability of the Instruments

To determine the reliability of the instrument, initial draft of the questionnaire was pilot-tested on a small sample of the population of the study. The outcome of the pre-test exercise necessitated the modification of some of the questions. The reliability of the instrument was further determined by using Cronbach Alpha reliability technique whereby a total of 62 copies of questionnaire were used for the purpose. Upon collection it was sorted and coded appropriately and the result of the test gave the value of 0.906 as shown in the table below:

**Table 3.4: Reliability Statistics**

Cronbach Alpha	No of Items
0.906	40

**Source: Researcher's Field Survey, 2019**

**Computation: SPSS Ver. 20**

From Table 3.3 above, the coefficient obtained was 0.906 which signifies that the instrument was reliable judging from the bench mark of acceptance of  $\geq 0.70$  or 70%.

### 3.5 Method of Data Analysis

Data generated from primary source was analyzed using descriptive statistics such as frequency tables, weighted mean and simple percentages. Some of the questionnaire instrument which was structured using the Likert five-point response scale and ranked as follows:

A - Agree = 1

D - Disagree = 4

SA - Strongly Agree = 2

SD - Strongly Disagree = 5

U - Undecided = 3

**Decision Rule:** A mean score of less than 3.0 was considered as disagreed or low while a mean score of more than 3.0 was considered as agreed or high.

The demographic data was analysed through the means of percentile method and explained with pictographic aids while the research questions were analysed using mean scores and standard deviation. The hypotheses were tested using ANOVA tables and t-test regression analysis with the aid of Statistical Package for Social Sciences (SPSS) version 20.

#### 4.0 DATA ANALYSIS, FINDINGS AND RECOMMENDATIONS

**KEY:**  
 X1 = E-administration (Automated Admission Processes)  
 X2 = E-Administration (ICT Application)  
 X3 = E-Administration (Computer-based Test)  
 X4 = E-administration (Online payment of fees)  
 X5 = Service delivery (Improved Registration)  
 X6 = Service Delivery (Routine Administration)  
 X7 = Service Delivery (Examination Management)  
 X8 = Service Delivery (Financial Probity)

Therefore:

$$\begin{array}{ll} X1 = f(X5) & X2 = f(X6) \\ X3 = f(X7) & X4 = f(X8) \end{array}$$

See Appendix for details.

**Decision Criteria:** Reject  $H_0$  if the calculated value is greater ( $>$ ) than the f- or t-test critical (tabulated) value and accept  $H_1$ . But if otherwise, that is, if the calculated value is less than ( $<$ ) the f or t-test critical (tabulated) value, reject  $H_1$  and accept  $H_0$ .

##### 4.1.1 Hypothesis one: The automation of admission processes has not enhanced registration exercises in tertiary institutions in Anambra state.

Table 4.3.1.1: ANOVA Table for Hypothesis One

Measures of Association

	R	R Squared	Eta	Eta Squared
X1 * X5	.998	.997	1.000	.999

ANOVA Table

		Sum of Squares	Df	Mean Square	F	Sig.
X1 * X5	(Combined)	21817.854	15	1454.524	27998.079	.000
	Linearity	21771.901	1	21771.901	419086.638	.000
	Between Groups Deviation from Linearity	45.953	14	3.282	63.182	.000
	Within Groups	19.534	376	.052		
	Total	21837.388	391			

Source: Researcher's Field Survey, 2019

Computation: SPSS Ver. 20

From the above table,  $R^2 = 0.998$  which shows that all variables subjected to test are measured at 99% level of significance. Also the ANOVA table gave the f-cal. value as 63.182 while Prob. F-stat. value is 0.120 at 0.05 level of significance. Since f-cal. of 63.182 is greater than the f-stat. of 0.120 (critical) ( $df_1 = 1$ ,  $df_2 = 2$  n = 391) = 0.005, we have reason to accept the alternate hypothesis that says the automation of admission processes has enhanced registration exercises in tertiary institutions in Anambra State.

Table 4.1.1.: T-Test for Hypothesis One

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1	X1	13.9184	391	7.47329
	X5	13.7398	391	7.45617

The averages mean of 13.9184 and 13.7398 which fall within the acceptance region of above 3.01 shows that automation of admission processes has effect on registration exercises in tertiary institutions in Anambra State.

#### Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 X1 & X5	391	.998	.000

From the above table, correlation of variables was subjected to test and revealed that X1 and X5 were correlated at 0.998 level of significance, indicating that the variables above can influence each other. The t-test statistics was therefore carried out to confirm if the result of the average mean is significant on the automation of admission processes and registration exercises in tertiary institutions in Anambra State.

#### Paired Samples Test

Automation of admission processes registration exercises	Paired Differences					t-cal	t-tab	Df	Sig. (2-tailed)				
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference									
				Lower	Upper								
Pair 1 X1 - X5	.17857	.40929	.02067	.13793	.21921	8.638	2.995	391	.000				

Source: Researcher's Field Survey, 2019

Computation: SPSS Ver. 20

From the above, t-cal. of 8.638 > t-tab. of 2.995, and based on the decision rule of t-test statistics, the null hypothesis is rejected, while the alternative hypothesis is accepted to the effect that the automation of admission processes has enhanced registration exercises in tertiary institutions in Anambra State.

#### 4.1.2 Hypothesis two: ICT has not been used to effect routine administration in tertiary institutions in Anambra state.

Table 4.3.2.1: ANOVA Table for Hypothesis Two

#### Measures of Association

	R	R Squared	Eta	Eta Squared
X2 * X6	.992	.985	.999	.997

#### ANOVA Table

		Sum of Squares	Df	Mean Square	F	Sig.
X2 * Groups	(Combined) Linearity Deviation from Linearity	21868.344	20	1093.417	6643.375	.000
		21593.433	1	21593.433	131197.204	.000
		274.910	19	14.469	87.910	.000
	Within Groups	61.062	371	.165		
	Total	21929.406	391			

Source: Researcher's Field Survey, 2019

Computation: SPSS Ver. 20

The measure of association gives the  $R^2$  as 0.985. Variables subjected to test are measured at 99.01% level of significant. Also from the above ANOVA table, f-cal. = 87.910 while Prob. F-stat. = 98.50 at 0.05 level of significance. Based on the decision rule (f-cal. of 8.910 is less than the f-tab. of 98.50 (critical) (df1 = 1, df2 = 2 n = 391) = 0.005), the null hypothesis is therefore accepted.

Table 4.3.2.2: T-Test for Hypothesis Two

#### Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 X2	13.8138	391	7.48902	.37825
X6	14.0765	391	7.27180	.36728

The average means of 13.8138 and 14.0765 which fall within the acceptance region of above 3.01 shows that the application of ICT on routine administration can affect service delivery in tertiary institutions in Anambra State.

Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 X2 & X6	391	.992	.000

Paired Samples Test

E-administration (ICT application) on service delivery (Routine administration)	Paired Differences					t-cal	t-tab	Df	Sig. (2- tailed)				
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference									
				Lower	Upper								
Pair 1 X2 - X6	-.26276	.94061	.04751	-.35616	-.16935	-5.531	1.995	391	.000				

Source: Researcher's Field Survey, 2019

Computation: SPSS Ver. 20

From the above table, X2 and X6 were found to be correlated at 0.992 level of significance and by implication influence each other. The t-test statistics carried out showed that t-cal. of  $-5.531 < 1.995$ , necessitating the acceptance of the null hypothesis to the effect that ICT application has not been utilized in routine administration to improve service delivery. This indicates that there are factors militating against the integration of ICT in the management.

#### 4.2.1 Discussion of Findings

##### 1. Automation of Admission Processes and Registration Exercises in Tertiary Institutions in Anambra State

The study revealed that automated admission process in Anambra State tertiary institutions has enhanced the registration exercises of newly admitted students. Both the f-test result from the ANOVA table and the result of the t-test analysis accepted the alternate hypothesis with calculated figure greater than the tabulated value. In most of the institutions studied, admission forms are purchased online. Prospective students are screened and results of successful candidates are released via designated portals. Acceptance of admission for interested candidates and payment of fees are also automated. The process of registration also involves physical biometric data capturing which is normally used by the schools to build the students' database which in turn is used for identification of students, checking of impersonation during examinations, etc. Courses are also registered online.

The automated admission processes has made the registration exercise less cumbersome and less time consuming. On whether the process is more costly than the old or traditional method, the respondents gave an equal answer. A comparative analysis of the selected institutions shows that Nnamdi Azikiwe University and Federal Polytechnic, Oko have better adopted and integrated electronic admission processes and registration exercises than the other institutions. Federal College of Education (Technical), Umunze is still on the commencement stage; the institution still combines online processes with several manual methods in their enrolment exercise. For instance, purchase and submission of admission forms are done manually while payments are done via remita payment platform. No biometric data capturing for records management or online course registration is available in the school. It was also observed that despite the challenges of inadequate fund, epileptic power supply and internet hiccups, e-administration has improved effectiveness, efficiency and accuracy in service delivery in the institutions that adopted it.

##### 2. Information and Communication Technology (ICT) and Routine Administration

The study revealed that ICT has not been utilized for effective routine administration in tertiary institutions in Anambra State. The result of the analysis from the mean scores, t-test and ANOVA table all confirmed the above statement. Test of hypothesis conducted shows that both f-test and t-test calculated is less than the critical values, thereby necessitating the acceptance of the null hypothesis. The respondents disclosed that most mails in the institution are manually treated. Records are not electronically generated, documented or stored for easy retrieval. Most offices still have stacks of files that take up a lot of space. Most of the institutions do not operate functional websites for online transaction within and outside the institutions. The respondents further disclosed that the manual method of treating mails and keeping of records generally slows down the administrative activities in the institutions. Lack of infrastructure was noted as one of the militating factors against effective use of ICT in the institutions. It was also observed that most of the respondents do not have personal computers and laptops which grossly affected e-communication channels in the tertiary institutions studied.

### **. Relationship of Findings with Empirical Review**

From the findings of the study, online admission process in Anambra state public tertiary institutions has enhanced enrolment exercises of newly admitted students despite the challenges associated with epileptic power supply and internet hiccups. This finding is in line with the works of Osakede & Ojo (2017) as well as those of Chukwuemeka, Ubochi & Okechukwu (2017) who submitted that despite the challenges of poor internet services, e-administration has improved effectiveness, efficiency and accuracy in service delivery in some Nigerian universities.

The study also revealed that information and communication technology (ICT) has not been utilized for effective routine administration in the institutions studied. This particular finding agreed with the earlier submissions of Hamilton & Mbachu (2016) in their work titled “the place of ICT in teaching and learning in Nigerian tertiary institutions”. According to them, lack of basic ICT facilities like computers and personal laptops has grossly affected e-communication channels in some tertiary institutions in the country. Furthermore, earlier studies done on e-administration in tertiary institutions in Nigeria by both Aladejani (2018) and Akpoiroro (2018) showed low e-service usage as well as low level of students’ satisfaction in the institutions.

It was also discovered from this study that computer-based test is not fully utilized to improve examination management in the institutions. According to Abdulkareem (2015), the realization of e-governance objectives is hindered by lack of infrastructure, low maintenance of computer and computer hard wares, power failure and illiteracy. On the other hand, Onu (2017) revealed that the current state of examination management in Nigerian tertiary institutions is poor until the introduction of CBT and that sufficient efforts have not been made by government to incorporate ICT in routine academic assessment. He therefore noted that adequate funding, logistic support, power supply, training and retraining of both staff and students in the operationalization of computers and software packages will help in improving ICT and examination management.

Finally, the research revealed that online payment of fees though seriously affected by poor infrastructure has enhanced financial probity by blocking leakages. Okifo & Igbunu’s work on “E-payment system in Nigeria: Economic benefits and challenges” has a similar finding. According to them, e-payment though presently challenged by acceptability and fraud makes transaction faster and more transparent. Similarly, Asaolu, Ayoola & Akinkoye (2011) opined that the benefits of e-payment is been undermined by a number of constraints that invariably leave stakeholders seriously unsatisfied. They recommended that government should provide adequate infrastructure to boost security.

#### **4.2.3 Summary of Findings**

1. Most tertiary institutions in Anambra State have keyed into the e-administrative system of management of the core areas of their activities. Some of the areas where ICT have been used include selection and admission of new entrants, post UTME and in-course examinations, use of e-mails services for general administration, fee payment and electronic library.
2. Automation of admission processes has enhanced registration exercise in tertiary institutions in Anambra State. Tertiary institutions in Anambra state have to a reasonable extent adopted the automated admission processes for prospective students. In this regard, entrance forms are purchased online, same with acceptance of admission, payment of fees and course registration. The e-process has made enrolment exercise less cumbersome.
3. Application of Information and Communication Technology (ICT) is not fully utilized in routine activities. Most mails are not electronically treated for quick dispatch of directives. There are major challenges militating against the use of ICT. The institutions’ websites for online transaction within and outside are not fully functional. Records electronically generated are not easily retrieved due to technical and infrastructural challenges, especially poor network services.

#### **4.2.4 Recommendations**

1. The need to address the problem of epileptic power supply in Nigeria cannot be over-emphasized. This will put a stop to cases of power failure interrupting examinations. Also, institutions should improve on their current ICT infrastructure and strategy particularly as regards accessibility of websites and internet.
2. Frequent training and retraining of both workers and students in ICT technology is also paramount. This will not only enhance implementation of e-administration but will generally improve teaching, learning and research in the institutions.
3. To meet the demands of the global best practices in higher education, the implementation of CBT will require a more secure testing environment that will prevent students from seeking answers by scanning their computer hardware during examinations, instant messaging, e-mailing friends or browsing the internet. CBT can also be improved by using other forms of question types like theory-based and diagrammatic questions to make the test questions more diverse. Furthermore, post-test feedback can also be introduced.

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