Impact Assessment of Infrastructural Provisions and Quality Education in Selected Federal Tertiary Institutions in Kaduna State, Nigeria

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ABSTRACT: This paper assessed the impact of infrastructural provisions on the quality of selected Federal Tertiary Education in Kaduna State, Nigeria. The impact assessment is to determine whether or not the provisions of infrastructure has any significant impact on the quality of Education in selected Federal Tertiary Institutions. The variables assessed include state of library facilities, power and energy, development of science laboratories and adequate health and recreational facilities. The survey research design was employed in the study while data was generated from both primary and secondary sources using observation, questionnaire and interview. Data was analyzed qualitatively and quantitatively using both descriptive and inferential statistics. The tools utilized include frequently tables, simple percentages, mean, standard deviation and chi-square inferential statistics. The resource dependency theory (Pfeffer and Salanick 1978) was adopted as a framework for the work, the study revealed that in the selected Tertiary Institutions, there is existence of poor library, facilities, inadequate power and energy and I.C.T facilities, inadequate provisions of science laboratories, workshops and lecture theatres, health care and recreational facilities were not sufficiently available to enhance quality of education which is on the decline. It was therefore recommended that there should be holistic approach towards provisions of infrastructure and that the institutions should henceforth get 50% annual allocations from the Federal Government as prescribed in the 2009 Nigeria educational reform roadmap to meet their basic needs and revive teaching, and provisions of facilities for better service delivery for meaning quality of education.

I. INTRODUCTION

Education is recognized worldwide as the most important engine that propels technology and national development in modern societies (Shagari, Bello & Umar 2013). In another similar line of reasoning, Mandela and Michel (2012) were of the view that Education can be the difference between a life of grinding poverty and the potentials for a full and secure one, between a child dying from a preventable disease and a family raised in a healthy environment, Isolation and the community that can protect them. Education has for long been recognized as a panacea for the nation's ills. A good higher education system is required for the overall prosperity of a nation. However, in Nigeria, tremendous growth in the higher education sector has made the administration of higher education institution complex. As the pinnacle of the educational pyramid, the country's higher institutions have critical capacity building roles to play. Generally, it is a basic assumption that higher institutions are, by definition and long established tradition, meant to be places where all learning activities are governed by creative skepticism, constant questioning, disputations and argumentation. The infrastructure is among the important operational inputs into any instructional programme. This constitutes elements that are necessary for teaching and learning; and is vital in the development of qualitative higher education. Ejiogu (2007) noted four important factors in an attempt to balance the qualitative and quantitative growth of the education system in Nigeria. These range from the quality number of infrastructure (in forms of buildings, machinery and equipment through the usage to maintenance of the infrastructure). Okebukola (2005) pointed out that the stress put on the higher institutions in term of demand and the limited expansion in physical facilities and academic staff to cater for the demand has taken a great toll on the quality of programme in the institutions. Subair (2011) thus submitted that the quality of output (graduates) is a function of infrastructure that determines the student's learning environment and the motivation to learn. Therefore, if quality is to be ensured in the nation's

higher institutions, adequate provisions of Lecture halls, laboratories, students' hostels, library spaces should be provided. National Universities Commission (2004) reported that physical facilities at the federal universities were in deplorable condition. It is saddening to note that the equipment for research, teaching and learning are either lacking or very inadequate and in a bad shape to permit the universities the freedom of embarking on the basic functions of academics. There are no facilities for effective practical learning for the students in most courses, especially in the universities of Technology, which require a lot of intensive training in terms of students' usage of their psychomotor skills and hi-tech equipment. In fact, when universities face the NUC accreditation exercise, it is shameful to observe that in order to scale through the hurdles of the exercise, some departments will have to borrow equipment from neighboring and sister institutions, present them and claim their ownership. With the remarkable increase in the number of universities and university enrolments, it becomes worrisome that the tremendous increase in placement may not correspond to the state of available physical infrastructure. By implication, Nigeria higher institutions are under the siege of decay. The fundamental question therefore is that do infrastructural facilities have any impact on the quality education in Nigeria?

This paper therefore attempts to assess the impact of infrastructural provisions on the quality of education with focus on selected federal tertiary institutions in Kaduna state Nigeria namely Ahmadu Bello University Zaria, Kaduna Polytechnic and Federal College of Education Zaria. The study's objective centered on the examining the extent to which infrastructural provisions impacted on quality of tertiary education. The hypothesis formulated for the study is that there is no significant relationship between infrastructural provision and quality of tertiary education in these tertiary institutions.

This paper would be significant to educational planners and administrators, education stakeholders, tertiary institutions, the government, education donor agencies, academicians, researchers and the general public.

II.   LITERATURE REVIEW

The basic reasons for the establishment of public schools in all countries of the world are to provide educational opportunities to the children and integrate them into their societies. It is also to prepare them to be functional citizens who will be able to contribute their quota to the development of their societies and families. These objectives are in line with the universal declaration of human rights in 1946, the United Nations General Assembly charter of 1959, and United Nations conventions on the rights of the child (1989) which saw education as a human right issue, (UNICEF, 2004).Based on this convention, all children regardless of socio-cultural and economic background should be given access to education

Concept of Tertiary Education

Tertiary Education consists of a University sector and a non-University sector that is comprised of Polytechnics, Monotechnics and College of Education (Clark et. al., 2013).

Higher education products or students must exhibit very high intellectual competence or high level of intelligence. University education for instance confers on its recipient the status of an accomplished individual. This presupposes that he/she has been equipped both mentally and socially to assume a dignified position and provide effective leadership where he/she finds himself/herself; whether in the workplace or at the community service level. This is why on the day of graduation; only those found worthy in learning and character are conferred with degrees and certificates.

A higher education product is expected to be dynamic and versatile. This derives from the rigorous exercise he/she had passed through. According to Aminu, (1986), there has always been a gap between ideas and realities. According to him "Universities do not grow like building whose final height and shape is determined before the foundation is dug". Instead "universities the world over grow like trees whose final height, size and shape cannot be determined from the start." A University/Tertiary Institution would consist of students, staff, the workers, the administrators, the well-wishers and above all, the alumni.

Concept of Infrastructure

A survey of literature shows that several concepts have been used to explain infrastructure. Among such concepts are the "school plant", "learning resources", "physical resources" and "educational resources", to mention but a few. (Subair, 2008; Ehiametalor, 2001) described infrastructure as the operational inputs of every instructional programme and constitutes elements that are necessary for teaching and learning. Such include buildings, laboratories, machinery, furniture and electrical fixtures. These must be functional in relation to other aspects of the community, such as health centres, libraries, and

good roads and must be large enough to allow for expansion as enrolments expand. In the same vein, Osagie (2003) opines that infrastructure represents the aesthetic picture of the school conveyed by the position of structures in relation to one another. It also represents the empirical relevance of the totality of the school environment for the realization of the school business (teaching/learning). He asserted in specific terms that school plant is made up of landscape, trees, lawns, hedges, and accompanying paths, playgrounds, buildings, security facilities and utilities. However, a well-equipped and well-maintained physical plant can make learning a more pleasant experience and discourage early drop-outs. It can as well attract better quality teachers. In summary therefore, infrastructure can be viewed as the totality of all that goes into education such as classrooms, lecture theatres, laboratories, libraries, electricity, water, health centre, sports and recreation centres, ICT, machines and furniture put there-in, with the intention of facilitating teaching-learning

Concept of Quality of Education
Many definitions of quality in education exist, testifying to its complexity and multifaceted nature. It is a multidimensional concept, which encompasses all the functions and activities in schools. Arikewuyo (Adegbesan, 2011) views quality as what could be judged by both its ability to enable students to perform well in standard examinations and relevance to the needs of students, community, and the society as a whole. He concluded that quality serves as determination of graduation based on standard of excellence beneath which a mark of inferiority is imposed and above which grades of superiority are defined. Similarly, quality assurance in the university system implies the ability of the institutions to meet the expectations of the users of manpower in relation to the skills acquired by their outputs (Ajayi and Akindutire, 2007). Therefore, quality education can be an improvement on all aspects of learning and ensuring excellence so that recognizable learning outcomes are achieved by all learners, especially in literacy, numeracy and essential life skills. In other words, quality education should provide learners with essential skills necessary for wholesome development and responsible living. Assuring the quality of education provision is a fundamental aspect of gaining and maintaining the credibility of higher education programmes, institutions and systems worldwide. Quality assurance is designed to improve the quality of an institution's educational

methods; and outcomes. In a similar view, Alele-Williams (2004) defines quality assurance in any educational institution as that which indicates the pre-eminence and special features that make the institution distinct from other institutions. Consequent to the 2004 report of the National Universities Commission (NUC), a university regulatory body in Nigeria, on the universalization of quality assurance in higher education, universities were ranked in terms of their productive functions and relative efforts on their product. In the aforesaid NUC report no African university was among the first 200 across the globe.

Relationship between Infrastructural Provisions and Quality of tertiary Education
Qualitative tertiary education constitutes the pivot on which the development of any nation is based. Therefore, proper and correct acquisition of knowledge by the citizens of any nation is fundamental to its growth and development. Benya (2001) and Subair(2008) posited that, high quality university education and training requires that appropriate infrastructure be provided by the institution. All students deserve safe, technology-ready facilities designed for learning and adequate decent facilities, structured around their learning needs. More importantly, completion rate and satisfaction with the university programmes are closely related to the infrastructure that can be provided. School buildings that can adequately provide a good learning environment are essential for students' success. The bridge between good infrastructure and effective student learning is of great importance. Looking closely at a university system, there is no doubt that infrastructure play a great role in the welfare of students and the result is motivation to learning

Relationship between Infrastructural provision and other aspects of Quality
The quality of buildings may be related to other institutional quality issues, such as the presence of adequate instructional materials and textbooks, learning-teaching conditions for students and teachers, and the ability of teachers to undertake certain instructional approaches. Such factors as on-site availability of lavatories and a clean water supply, classroom maintenance, availability of space and furniture, all have an impact on the meaningful learning. Quality assurance of the institutional facilities can only be guaranteed if basic conditions and guidelines are followed from the onset. Basically, this means that infrastructural development must make provision

for adaptability or alteration probability, flexibility in user demands, accessibility to students, staff and society and due regards for aesthetic and clean environment. Salis (2002) developed a quality indicator checklist which shows what the physical environment and facilities in higher educational institutions must require both in qualitative and quantitative terms. These include availability of infrastructural development programmes (facility provision), adequacy of the facilities in terms of currency and relevance to purpose; students friendliness and centeredness of the facilities (attractive to students and suitable for their needs); regular maintenance and renewal of the dilapidated ones; the infrastructural development must be of international standard (globally acceptable) to attract foreign students, staff and recognition; and must be environmentally safe and of high sanitary standards.

III. THEORETICAL FRAMEWORK

The theoretical framework for this study hinges on the resource dependency theory (Pfeffer and Salancik 1978) which focused on how the external resources of organizations impact or affect the behavior – cum – performance of such establishments. The theory essentially espoused that the environment, physical resources/facilities, technical/information knowledge (Mcdowl 2018), social resources such as reputation enables organizations to survive or achieve corporate objectives. Essentially organizations depend on critical resources labour, capital, raw materials and physical facilities to function effectively. This theory is important to our study which evaluates how infrastructural facilities in the Tertiary Institutions under study are optimally available or otherwise to make for quality education as envisage by the 2009 educational reform benchmarks. A checklist of some physical facilities was observed in the case studies (table 4.3 through to 4.4 and 4.5) to further inform our findings and recommendations.

IV. METHODOLOGY

For the purpose of this study; the survey research design was adopted. This method focuses on population or universe (ABU, FCE Zaria, KADPOLY, FME, JAMB, and the regulatory bodies – NUC, NBTE and NCCE) on which data collected from the population are used for intensive study and analysis. A sample reflecting the characteristic of the population was drawn. This

provides the opportunity to generalize the findings of the study for the whole population.

The population of this study (accessible or study population) consists of members of staff, students, Alumni and extended Management of the selected federal tertiary institutions (ABU, FCE Zaria and KADPOLY), management of FME, JAMB and regulatory bodies (NUC,NBTE, NCCE) represented thus:
a) Extended management (Principal Officers, Committee of Deans and Directors).
b) Students Representative Council (SRC), their unit representatives and executive (EXCO) members.
c) Academic staff represented by ASUU (ABU) executive and their unit representatives, KADPOLY (ASUP) and FCE Zaria (COEASU).
d) Non teaching senior staff ABU (SSANU & NAAT) their executive and unit representatives, KADPOLY (SSAP) and FCE Zaria (SSUCEON).
e) Junior staff union ABU (NASU) their executives and unit representatives, KADPOLY (NASUP) FCE Zaria (NASU) their executives unit representatives,
f) Extended management of the FME, JAMB and Regulatory bodies of NUC, NCCE, NBTE.
Essentially, the total accessible population (study population) covers largely policy makers (primary and secondary stakeholders) relevant to our study.
The population of the study is shown comprehensively in table 3.1

Determination of Sample Size
For the purpose of this study, Taro Yamane's formula (1967) was used to determine the sample size of the study from the accessible/study population.
The formula is as follows:

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

Where n= sample size
N = total population
α= level of significance (5% or 0.05)

$$n = \frac{644}{1+6448(0.05)^2}$$

$$n = \frac{46808}{1+644(0.0025)}$$

$$n = \frac{644}{1+1.61}$$

$$n = \frac{644}{2.61}$$

n= 246.74n≅247

	Alumni Executives/Equivalent	Central Admin Management (Principal Officers and Deans/Directors	Students Representative Council (SRC) and Executive/Unit Reps	Senior Non-Teaching Staff Exco and Unit Reps	NATS and Unit Reps (Technologist)	Junior Staff (Exco and Unit Reps)	Academic Staff (Exco and Unit Reps)	Total Population
ABU Zaria	12	35	73	40 (SSANU)	30 (NATS)	36 (NASU)	40 (ASUU)	266
KADPOLY	11	15	25	24 (SSAP)	NA	26 (NASUP)	31 (ASUP)	132
FCE ZARIA	10	13	20	24 (SSUCOEN)	NA	24 (NASU)	30 (COEASU)	121
Regulatory Bodies (Management)	FME, NUC, NBTE, NCCE, JAMB		25 X 5 (Allocated)					125
Grand Total								**644**

Table 3.1: Population of the Study
Source: Researcher's Computation, 2019

	Alumni Executives/Equivalent	Central Admin Management (Principal Officers and Deans/Directors	Students Representative Council (SRC) and Executive/Unit Reps	Senior Non-Teaching Staff Exco and Unit Reps	NATS and Unit Reps (Technologist)	Junior Staff (Exco and Unit Reps)	Academic Staff (Exco and Unit Reps)	Total Sample
ABU	5	13	28	15	12	14	15	102
KADPOLY	4	6	10	8		10	12	50
FCE	4	5	8	9		9	12	47
Regulatory Bodies and FME, JAMB	FME (6), JAMB (6), NUC (10), NBTE (10), NCCE (10), (Allocated)						48	48
Grand Total								**247**

Table 3.2: Questionnaire/Interview Distribution to Sample Size
Source: Researcher's Computation, 2019

From the accessible population figure of 125 purposively determined for strategic management staff of FME, JAMB and the regulatory bodies (NUC, NCCE,NBTE) a total of 48 instruments were administered as indicated these are important policy and regulatory bodies central to our study.

Subsequently, the balance (247 - 48 = 199), were proportionately distributed to each category/strata (probability sampling technique) and thereafter simple random sampling technique used to select the key officers in each strata that are relevant and strategic to our study (e.g. Rector, Provost, Registrar, Bursar, Chief librarian, Directors of planning and statistics, ICT/MIS, works, executives of Alumni, staff, and students).

The research employed the use of purposive and stratified sampling techniques as suggested by Attwell and Rule (1991, 300) that "theoretical samples purposively select organizations that exhibit the desired features that are of the researcher's study". The population for the study is heterogeneous, hence the use of stratified sampling technique (staff, students, Alumni, and regulatory agencies). Thereafter, simple random was applied in each of the categories.

Data for this study was collected from both primary and secondary sources. The instruments of primary data utilized include the questionnaire, interview and observation. While secondary data were elicited from books,

magazines, periodical progress reports, published and unpublished research methods and the internet
In this study, both the qualitative and the quantitative methods of data analysis were employed using Statistical Package for Social Sciences (SPSS)

Two types of analyses are carried out with the data collected. These includes; descriptive statistics analysis using frequency tables, simple percentages, mean and standard deviation in analyzing and interpreting the data collected. inferential statistical tool of analysis was also employed in this study using Chi-Square Test.

Decision Rule in Hypotheses Testing
The decision rule when testing hypothesis is that;
a) If the probability value (p. value) is less than 0.05 level of significance, we reject the null hypothesis and conclude that there is significant relationship between the variables.
b) Alternatively, if p-value is greater than 0.05 level of significance, we accept the null

hypothesis and conclude that there is no significant relationship between the variables.

V. DISCUSSIONS OF RESULTS AND FINDINGS

Two hundred and forty seven (247) questionnaires were administered to respondents but only two hundred and fifteen (215) were returned. This indicated 86.9% response rate which is considered sufficiently representative for the analysis as suggested by Dommeyer, et al. (2004) who said that 75% response rate of questionnaire survey is adequate in this circumstance for analysis. The data were randomly collected from an adequate and representative sample. Notably, all returned questionnaires were dully filled. Also to avoid possible errors and excess of 10 percent (25 instruments) of the sample size were given to the research assistants to administer to the respondents proportionately in case(s) of inadequate returns. As shown above, the returns (86.9%) was sufficient for analysis.

Table 4.1: Rate of Returns of the Questionnaire

Institutions	Administered	Returned	Percentage
ABU Zaria	102	93	43.3
KAD Poly	50	47	21.8
FCE Zaria	47	40	18.6
Regulatory Agencies	48	35	16.3
Total	**247**	**215**	**100.0**

Source: Author's Computation 2019.

Test of Hypothesis:
The hypothesis formulated for this study is that
H_0: There is no significant relationship between infrastructural provisions and the quality of education in the selected tertiary institutions

H_1: There is significant relationship between infrastructural provisions and the quality of education in the selected tertiary institutions.

Table 4.2 A.B.U Infrastructure Expenditure

Years	Libraries	ICT Facilities	Lecture theatres, class rooms/ laboratorial	Health, environment & sanitation	Hostels	Recreation	Security	Road network
2011	250,000,000	250,000,000	750,000,000	-	-	-	-	-
2012	-	70,000,000	770,000,000	280,000,000	140,000,000	-	140,000,000	-
2013	-	310,000,000	620,000,000	930,000,000	620,000,000	-	620,000,000	-
2014	430,000,000	215,000,000	1,290,000,000	215,000,000	1,290,000,000	-	-	860,000,000
2015	-	2,520,000,000	4,200,000,000	1,260,000,000	-	-	420,000,000	-
2016	-	865,000,000	3,892,500,000	1,730,000,000	1,297,500,000	865,000,000	-	-
Total	680,000,000	4.3bn	11.52bn	4.41bn	3.35bn		1.18	0.86

Source: ABU Bursar's Office, 2018

From table 4.2, ₦26.23billion was spent by ABU on Infrastructure items over the period 2011 to 2016 with the least expenditure in the critical aspects of library facilities (N3.68billion or 2.6%) and ICT facilities (₦4.23billion or 16.1%)

vital for enhancing the quality of education. Lecture theaters/classrooms/laboratory witnessed the highest expenditure of (₦11.52billion or 43.9%) followed by health, environment and sanitation (₦4.41billion or 16.8%).

Notwithstanding, the 43.9% expenditure on theaters, classrooms and laboratories, our observation indicated that these facilities were overstretched with some lecture theaters unable to accommodate over 300-400 final year students in Public Administration, Local Government, and in the sciences. This may affect the quality of the graduates as exposed by the checklist on table 4.3 below:

Table 4.3 Checklist of some academic facilities in the three Tertiary Educational Institutions
Checklist on items observed from 3 libraries of the selected institutions inclusive of some lecture theatres.

Items/Subject	ABU	KADPOLY	FCE, Zaria
Library	Kashim Ibrahim Library (KIL) University Librarian – Prof. Umar Ibrahim	ISA Kaita Library (IKL) Alh. Bello Ahmed – Polytechnic, Librarian	College Library (CL) Dr. H.T. Mohammed – College Librarian
Seating Capacity	4,000 to serve 14 Faculties 40,000	3,000 Readers for Central Admin and 3 Colleges (Staff and students) 21,000	500 for Staff and students (15,000)
Internet/Workstations Databases	- 500 computer work station for E-Library (250- PG,) 150 undergraduate - Learning commons study space serves - 13 subscribed databases and 21 open access.	100 work/stations all functional with open access but with 3 subscribed for both staff and students	36 workstations (staff) Fed. Min of Communication ICT/Support Project, 2017. 80 Workstations for students
Video Conferencing Facility	- MTN – Net Library - 10 Years joint venture handed over to ABU, 2012 - Available all functional	None	None
Electronic Classroom for Training of Staff and Students	20 workstations functional	None	None
On-line Public Access Catalogue (OPAC)	Available but use cards when no power supply	Manual OPAC	Manual OPAC
Power Source/Duration	Powered vide ICICT (Iya Abubakar Centre) when Central Generator is out of service	Central Generator but limited to 7pm – 10pm when no power supply	Central Generator but limited to 6.30pm – 10pm when no power supply
Physically challenged facilities (library) for students with special needs	40 seats (Ground Floor) Brail emboser with 17 workstations and SARA/CE Supplied by TETFUND (2013,2016)	No Central facility 3 Departments have Brail	No central facility but Adult education school has a Braile.
Hours of Services	See Appendices XVIII		
Renovation and Condition of A/C's	NEEDS 2013 Sept 2017 TETFUND	TETFUND 2009 and NEEDS 2016 Average	NEEDS, 2017 TETFUND 2016

	Condition – Average	ventilation facilities and conveniences	Inadequate ventilation facilities and conveniences
Lecture Theatres and Laboratories/Workshop	1. Red and Blue Theatres (Fac. Of Admin) - Roof leakages - Inadequate to accommodate 428 students (Appendices XVIII) 2. Local Government Theatres - Renovated NEEDS 2013 - TETFUND 2017 - Fairly good but inadequate with 342 seats for a larger class 3. Faculty of Science Theatre 1 & 2 - Renovated by TETFUND, 2019. - Fair but inadequate for 1,800 students – Chemistry 201 (General Chemistry) to seat 300 each maximum (600) see Appendices XVIII - A class with students seating on the floor and standing outside was observed by the researcher (worst case scenario (05/02/2020) **Lectures not ICT driven with the necessary facilities as prescribed by the reforms.** **ABU** Faculty of Science Mechanical Workshop I Obsolete equipment: 1. Colcluster Lathe machine for fabrication 2. Blade and speed selector 3. Prince	5. Lecture Theatre at Central Admin. Headquarters with 3 colleges grossly inadequate. 6. Inadequate with 500 combine capacity for over 1500 students. 7. Note Kadpoly exceeded its carrying capacity over the years by 211%	The Central lecture Theatre Renovated in 2016 TETFUND is fair but inadequate. Appendices XVIII with no ICT facilities to conduct lectures

	Hunter-Beaverpal 4. Meddings-grilling machine To serve 245 – 400 level students (inadequate and installed in 1965)			

Table 4.4 Annual Percentage of budgetary funds expanded on A.B.U Infrastructure Items

Years	Libraries	ICT Facilities	Lecture theatres, class rooms/ laboratorial	Health, environment & sanitation	Hostels	Recreation	Security	Road network
2011	20%	20%	60%	-	-	-	-	-
2012	-	5%	55%	20%	10%	-	10%	-
2013	-	10%	20%	30%	20%	-	20%	-
2014	10%	5%	30%	5%	30%	-	-	20%
2015	-	30%	50%	15%	-	-	5%	-
2016	-	10%	45%	20%	15%	10%	-	-
Mean	5	13.3	43.3	15	12.5	1.7	5.8	3.3

Source: ABU Bursar's Office, 2018

The mean (averages) indicate that more was spent on theaters, classrooms and laboratories in ABU (43.3points) than critical areas of Library (5.0) and ICT facilities (13.0points)

Table 4.5 FCE Zaria Infrastructure Expenditure

Years	Libraries	ICT Facilities	Lecture theatres, class rooms/ laboratorial	Health, environment & sanitation	Hostels	Recreation	Security	Road network	Total
2011	6,192,394	8,256,526	6,193,394	4,128,263	2,064,131	4,128,263	6,192,394	6,192,394	43,347,759
2012	10,577,522	10,577,522	7,933,141	7,393,144	2,644,380	5,288,761	7,933,141	7,933,141	60,280,752
2013	1,628,216	10,728,193	8,226,139	8,026,161	3,026,111	6,289,662	8,133,142	8,133,142	54,170,766
2014	12,222,162	11,628,336	9,117,424	8,112,369	3,119,262	6,558,926	9,662,663	9,662,663	70,083,805
2015	14,127,389	11,269,442	10,262,773	10,136,,467	4,363,915	6,722,162	9,622,796	9,622,796	76,127,740
2016	13,542,050	13,542,050	10,156,537	10,776,129	3,385,512	6,771,026	10,000,100	10,156,537	78,329,941
Total	58,289,733	66,002,069	51,889,408	48,572,533	18,603,311	35,758,800	51,544,236	51,680,673	82,340,763

Source: ABU Bursar's Office, 2018

Table 4.5 indicated that FCE Zaria expended a total of N382,34 million on infrastructure items from 2011- 2016 with the highest spending on critical items of library (N58.88m or 12.24%), ICT facilities (N66.0million or 17.26%), and lecture theatre, classrooms and laboratories (N51.88million) critical for enhancing the quality of education.

Essentially, the table also shows that the more important infrastructure items (for quality of education) Libraries, ICT, facilities, Lecture theatres, Classrooms/Laboratories and health

attracted an expenditure of N224.7million or 13.6% as against the less critical items, hostels, recreations, security, and road networks with N157.59million or 12.7%.

The data on expenditure of infrastructural provision with respect to Kaduna Polytechnic was not available despite several efforts.

Table 4.6 below shows the Response of Respondents as regards to the relationship between infrastructural provisions and the quality of Tertiary Education.

Table 4.6 Infrastructural Provisions and Quality of Education

1. There is existence of poor library facilities in the tertiary institutions which have adverse consequences on the quality of learning, teaching and research.	3.7354	1.07977	Significant
2. Problems of power and energy adversely affects ICT facilities and other basic utilities for learning teaching and research	4.5258	.67579	Significant
3. Educational reforms have not adequately provided the science laboratories, workshops, lecture theaters, classrooms, and students' hostels that meet the minimum standards to enhance the quality of education	3.2963	1.05902	Not – Significant
4. Educational reforms have enhanced the provision of adequate health and recreational facilities to enhance learning.	2.8783	1.07343	Not – Significant

Table 4.6 revealed that more than average of the respondents agreed that:
1. There is existence of poor library facilities in the tertiary institutions which have adverse consequences on the quality of learning, teaching and research.
2. Problems of power and energy adversely affect ICT facilities and other basic utilities for learning, teaching and research.
3. Inadequate provision of science laboratories, workshops, lectures, theatres, class rooms, and students hostels that meet the minimum standards adversely affect the quality of education.
4. Educational reforms have not enhanced the provision of adequate health and recreational facilities to enhance learning.

Table 4.7 Chi-Square Tests for indices of infrastructural provisions and the quality of education in the selected tertiary institutions

	Value	Df	Asymp. Sign (2-sided)
Pearson Chi-square	98.2103	9	.014
Likelihood Ratio	149.199	9	.000
Linear-by-Linear Association	65.996	1	.000
N of Valid Cases	215		

a. 2 cells (12.5%) have expected count less than 5. The minimum expected count is 2.46.

The Chi-square result from table 4.7 shows that the P-value (0.014) is less than 0.05 level of significance. We therefore reject the null hypothesis in favour of the alternative hypothesis which implies that there is significant relationship between infrastructural facilities and the quality of education in the selected tertiary institutions.

VI. OBSERVATION AND FINDINGS
a. Infrastructural Provision
i. ABU, Zaria
- The study discovered that ABU spent N35.07 billion over the period 2011-2016 with the least expenditure in critical aspects of library facilities (N0.68 billion or 1.93%) and ICT (N4.23 billion or 12.6%) vital for enhancing the quality of education. Lecture theatres/classrooms and laboratories witnessed the highest expenditure of (N11.52 billion or 32.8%) followed by health, environment and sanitation (N4,41 billion or 12.57%).
- The study also revealed that a total of N20.5 billion was expended on items more directly affecting the quality of education (library, ICT, classrooms and laboratories) than other items such as hostels, recreation, security and road (N6.25 billion).
- Notably in ABU, no funds were spent on library facilities in 2012, 2013, 2015 and 2016 while a paltry 10% of the capital funds were spent on the library in 2014, when 50% of the capital funds were spent on hostels (30%) and roads networks (20%). The library and ICT facilities in ABU were above average and comparatively better than FCE and Kadpoly.

ii.   FCE, Zaria
-   Conversely, the study found-out that FCE Zaria expended a total of N382.34 million on infrastructure items from 2011 – 2016 with the highest spending on critical items of the library (N58.88 million or 12.24%), ICT facilities (N66.0 million or 17.26%) and lecture theatres, classroom and laboratories (N51.58million) critical for enhancing the quality of education.
i.   Responses from questionnaires revealed that inadequate funding adversely affects infrastructural provisions required to improve tertiary education generally with consequences on quality of learning, teaching and research.
ii.   Well over 80% of the respondents agreed that poor and inadequate library facilities, lecture theatres, classrooms and workshop adversely affect the quality and standards of education.
iii.   Inadequate funding also compounds the problems of power and energy needed for optimum utilization of ICT facilities and other basic utilities for learning, teaching and research.
iv.   Also that low funding levels have hampered education delivery, inspection, monitoring and other quality assurance legal activities.
v.   Also that weak and outdated quality assurance legal framework/instruments as well as lack of appropriate sanctions to defaulters adversely affect the quality of education.
vi.   The study also found out that educational reforms have not significantly enhanced the provision of adequate health and recreational facilities required to refresh staff and students for learning.
vii.   (a) We also observed the inadequacy of facilities such as lecture theatres in ABU, from 2014 to 2018 the researcher taught 450-350 students (workshop in Public Administration 400 level course) annually in the 300 students, with students sitting on the floor when the examinations are close. We had to negotiate or plead with colleague lecturers to spare their period and theater/classrooms before we can conduct test because the students need to be spaced to check examination malpractices sometimes without success. About 8 cases of malpractices were detected and subsequently established by senate within the period 2016-2018. This scenario was observed in other theatres/classrooms in the Faculties of Education, Science and Department of Local Government and Development Studies which relatively had the best theatre, though lectures

are not ICT driven as envisaged by the 2009 Nigeria educational reforms.
viii.   (b) Indeed the reforms prescription of ICT driven lectures with student computer ratio 1:4 and provision of computers to all academic staff has not been achieved. Also the deployment of 40% of annual attractions of the Tertiary Institutions to library and physical facilities was yet to be attained as shown in Tables 4.2, 4.3 and 4.4.
ix.   In the FCE, Zaria we discovered that the only theatre is fairly large accommodating about 300-400 students but the furniture and fitting are old, dilapidated, with no adequate electricity and electric fans non-functional. The E-library is functional but not elaborates capital allocations shows 62% in 2011 and 55% in 2012 which was considered just above average. The inability of the Institutions to meet the due process promptly was responsible for this situation.
The total funds released to Kadpoly was N4.3 billion (31.5%) (2011 – 2016) as against N13.8 billion (50% annual budgetary increase expected as per the reform benchmarks) representing a shortfall of N9.4 billion or 68.5%.
x.   Comparatively the reform benchmark of 50% annual increase in government funding was least achieved in Kadpoly (31.5%), followed by FCE, Zaria (40.8%) and the highest was ABU (86.8%). Recall ABU retrieved all its capital and recurrent allocations to achieve this feat (i.e. 86.6%).

VII.   CONCLUSION
This paper assessed the impact of infrastructural provisions on the quality of federal tertiary educational institutions in Kaduna State Nigeria; Focusing on selected tertiary institutions. Infrastructural provisions such as classroom, library, laboratories, instructional gadgets and office space were significant in enhancing the quality of tertiary education. Unfortunately, lecture rooms and office places were grossly inadequate and not convenient for proper positioning of modern electronic gadgets that will accommodate current curriculum and the globally acceptable mode of teaching and learning. Indeed tertiary institutions are expected to exhibit high quality teaching and learning characterized by factors such as quality teachers, quality learning materials and adequate infrastructure. This study shows that the selected federal tertiary institutions have no adequate infrastructure that are commensurate with the number of students on the institutions'

enrolment and number of programmes. Surprisingly, facilities available in some tertiary are not modern and do not portray tertiary status in any manner. If the quality of the infrastructure can be this low, then the quality of the staff and students who need them to work for the achievement of effective teaching and learning for quality outcome will be in doubt. Consequently; we concluded that the quality of education is on the decline as we reject the null hypothesis and accepted the alternate hypothesis which shows that there is significant relationship between infrastructural provisions and the quality of the education in the selected federal tertiary institutions in Kaduna State.

Based on the above conclusions; the study recommends the following:
1. There should be holistic approach by government to wake up to its responsibilities of providing adequate funding that can facilitate the provisions of adequate infrastructures that will be of great benefit to the tertiary institutions.
2. Tertiary institutions should hereforth also get 50% annual increase in allocation from the federal government to provide for basic infrastructures such as Liberians science equipment and workshops, lecture theatres which should enhance the quality of tertiary education as stated in 2009 Nigeria educational reforms agenda.
3. There should be development of a high level maintenance culture on the existing infrastructures.

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