

THE PLIGHT OF SCIENCE ACADEMICS IN PUBLIC UNIVERSITIES IN NIGERIA: IMPLICATIONS FOR UNIVERSITY ADMINISTRATORS TO MAKE RIGHT DECISIONS FOR UNIVERSITY DEVELOPMENT AND SUSTAINABILITY

Okwelogu Izunna Somadina

Nnamdi Azikiwe University, Awka

Aibe Joseph Ndayebom

Teaching Service Commission, Lokoja, Nigeria

Niyi Jacob Ogunode

Department of Education, University of Abuja, Nigeria

Abstract

The paper examined the challenges Science Academics in Nigerian public universities are facing. We used both primary and secondary data. The data were collected from both print and published papers. The paper concluded that lack of modern laboratories, inadequate laboratories, the teaching of large classes, poor motivation, ineffective training programme, poor research funding, un-conducive working environment, strike actions, insecurity, poor internet services and shortage of ICT facilities are the challenges Science Academics are faced with in some public universities in Nigeria. To address these problems, the paper hereby among other things recommends that the government should increase the funding of public universities and more priority should be given to science programmes.

Keywords: Science Academic, Public Universities.

Introduction

Public universities are universities owned by the government and established to provide post-secondary schools for Nigerians. They are universities established by an act of parliament to serve the interest of the general public by dealing with the provision of teaching, research and community services (Ogunode, 2020).

Public universities in Nigeria are grouped into federal and state-owned universities. The federal universities are owned by the federal government of Nigeria while the state universities are owned by the state government. The total number of federal and state public universities is 49 and 59 across the country (NUC, 2022).

The universities cardinal programme includes teaching, research and community service and the objectives of the universities in Nigerian higher education, include the acquisition, development and inculcation of the proper value orientation for the survival of the individual and societies; the development of the intellectual capacities of individuals to understand and appreciate environment; the acquisition of both physical and intellectual skills which will enable individuals to develop into useful members of the community; the acquisition of an overview of the local and external environments (FRN, 2013).

The implementation of these cardinal programmes and the realization of universities' objectives depend on the quality of humans and materials. This higher education is designed and structured to function with human and material resources. The materials resources include; administrative blocks, offices, ICT facilities, libraries, water, electricity, internet services, classrooms, instructional materials and so on, while the human resource include the teaching and non-teaching staffs. The teaching staffs are called the academic staffs (Ogunode & Adamu, 2021).

Academic staffs are the teaching staffs in higher institutions. Academic staffs are the implementer of the school curriculum and lecture presenters. Academic staffs are the teachers and delivery of instruction in higher institutions is through them. Academic staffs are the knowledge and character builders in the higher institution. The academic staffs are the engine room of the higher institutions. They are the pillar and foundation of higher institutions (Ogunode, Jegede & Musa, 2021).

The functions of the academic staff include lecturing, preparing the lecture note, preparing the lesson note, sourcing for instruction materials, assessing the students through continuous assessment and examination, setting exams questions, marking the answer sheets, supervising students research work, especially projects, theses and dissertations and prepare the students' grade points. The academic staff conducts different levels of research, presents their findings and contributes to the development of knowledge in higher institutions (Ogunode, Adamu & Ajape 2021).

Academic staffs in the Universities are either science-inclined, social science-inclined or Art inclined. Science-inclined academics are referred to as scientists or Science Academics. The Science Academics in public universities in Nigeria are faced with many challenges. This paper aimed to discuss the plight Science Academics are faced with in Nigerian public universities.

Concept of Science Academic

Science Academics are professional lecturers with specialization in the field of sciences. Science Academics are science teachers that specialized in programmes like Biology, Chemistry, Physics, Mathematics, Environmental science, Biochemistry, Biotechnology, Zoology, Botany, agricultural science, Geology, physic, statistics, computer science and so on. A science academic is an individual that has been trained and certified by various tertiary institutions to practice in the field of sciences. Okwelogu, Ogunode & Abayomi (2021) confirmed that science lecturers are vital to the development of science education. Science lecturers are implementers of science curricula in higher institutions. The place of science teachers in the development of science education cannot be underestimated. An effective science teacher should be a master of his subject, as well as grounded in methods of teaching and be able to relate the science concepts to real-life experience

The plight of Science Academic in Public Universities in Nigeria

Science academics in most tertiary institutions are faced with many problems. Some of them; are lack of modern laboratories, inadequate laboratories, the teaching of large classes, poor motivation, ineffective training programmes, poor research funding, an un-conducive working environment, strike actions, insecurity, poor internet services and shortage of ICT facilities.

Lack of Modern Laboratories

Science academics in Nigerian public universities are faced with the problems of lack of modern laboratories to conduct research and implement teaching programmes. Most public universities spread across the countries do not have modern laboratories where advanced research can be carried out. This has put stress on many science academics working in various public universities. Though some newly established universities have modern laboratories while many others don't. Ebehikhalu & Dawam (2017) observed that most of the laboratories are dilapidated and relevant equipment is lacking and where they are available, inadequate equipment makes them non-functional and obsolete. Sometimes, the laboratories double as lecture rooms which are not conducive for teachings and learnings. In the words of Ebehikhalu & Dawam (2017), the provision of ventilation is very poor with inadequate lighting, overcrowded and stuffy. At the main campus, there was only one central, inadequately equipped

engineering workshop for eight programmes. Ezechi, & Ogbu, (2017) submitted that majority of Nigerian schools lack laboratory spaces, and those who have spaces lack the equipment and necessary infrastructure for proper teaching and learning of science. Science, therefore, is not a miracle where something happens out of nothing.

Inadequate offices and Lecture Halls

Majorities of science academics in universities across the country do not have conducive offices where they can relax and even carry out some minor research work. This problem is linked to the challenges of the facilities gap in most public universities. It has been observed that public universities are faced with a shortage of infrastructure facilities. This made it impossible for most of the universities to provide decent and conducive offices for their academic and non-academic staffs.

Every day the universities are expanding with new enrolment and placement of more staff without expansion in the existing facilities across the institutions. Ogunode (2020) opined that many public universities in Nigeria do not have adequate lecture halls, laboratories and offices for both students and academic staffs. Many academic and non-academic staff do not have offices and peradventure they have, it's been shared by five to six lecturers. The offices of the deans and heads of departments are not something to write home about. The Students do not have adequate lecture halls and hostels accommodations (Ogunode & Abubakar, 2020)

The teaching of Large Classes

Science academics are also faced with the problem of teaching large classes. Even when the National Universities Commission provided a minimum academic standard for all science programmes. For instance, the NUC Benchmark Minimum Academic Standards (BMAS) of 2007 stipulated the following teacher/students ratio: 1:20 in science; 1:15 in Engineering and technology; 1:10 in medicine, veterinary medicine and pharmacy, 1:15 in agricultural and environmental sciences and 1:30 in education, management science, social science, law and arts. Due to high student enrolment, some of these policies on teacher-student ratio are not fully implemented in some public universities. The failure of some universities to implement these policies exposed science academics to teaching large classes which is not good for quality education and ranking purposes. The teaching of large classes by Science Academics is also traced to the shortages of Science Academic Staffs in public universities across the country. Okwelogu, et al (2021) observed that it is unfortunate that as important as a science teacher is to the social, economic and technological advancement and development of the society, the majority of the public higher institutions do not have adequate science lecturers in their various science departments and faculties. This problem is confirmed by Ogunode, & Aiyedun, (2020) who opined that another problem facing the administration of science programmes in Nigerian higher institutions is the challenge of inadequate science lecturers. Data from the NUC revealed that universities experience acute shortages of teaching staff in computer science and technology-based disciplines and very acute in disciplines such as law, engineering, medicine and surgery. These shortages are attributed to several reasons, such as poor incentives for serving teachers, an inadequate turnout of teachers in these subjects by teacher-training institutions in the country, and the exodus of lecturers to Western countries in search of greener pastures (NEEDS, 2014)

Poor Motivation

Science academics in Nigerian public universities are poorly motivated. Their salaries are not paid on time. The various fringe benefits and welfare packages are not well implemented. Science academics are subjected to all kinds of treatment that professionals like them in other parts of advanced countries are not exposed to. Edokhamhen & Ogunode (2020) observed that another factor responsible for poor teaching programmes in Nigerian higher institutions is poor motivation. The academic staffs teaching in Nigerian higher institutions are poorly motivated and this, directly and indirectly, affects their performance. When teachers are poorly motivated, it affects their productivity which also affects the performances of the students. Bennell & Akyeampong (2007) discovered that sizeable percentages of school lecturers are poorly motivated in sub-Saharan Africa and South Asia. Akinfolarin & Ehinola

(2017) did a study that investigated the motivation and effective performance of academic staff in higher education. The study revealed that 60% of the respondents agreed that there was a lack of provision for regular payment of salary and other remunerations by the head to promote performance. This study also revealed that the provision of adequate chances for professional growth, and instructional facilities enhance the lecturer's performance. Also, a study carried out by Ezechi (2016) showed that science teachers in Nigeria are not motivated. Science teachers are faced with poor condition of service, their salaries are not paid regularly, no opportunities for developmental ideals and were not granted funds for innovations and creativity. All these have affected science teachers' performances in contributing towards learning and societal development

Ineffective Training Programme

The ineffective training programme is also a problem Science Academics are faced with. Staff training, conference attendance and facilities development are handled by TETFund. TETFund is an institution established by the Nigerian government to sponsor staff development and conference attendance for Academic staffs and Non-academic staffs. Many Science Academics have applied for TETFund to further their studies in Master's and PhD levels but are denied due to inadequate funds on the part of the commission. Ogunode & Oluseun (2020) observes that inadequate funding of Nigerian higher educational institutions is a major problem facing the administration of professional development program for employees across higher institutions in Nigeria. Adequate funding is vital for the implementation of the professional development program. Without adequate funding, no professional development program can be fully implemented as planned. Many programs for higher education institutions, such as the teaching program, research program and community service program have not been developed due to poor funding. The professional capacity development program for higher education institutions is not effectively implemented in many higher education institutions across the country due to poor funding of higher education in Nigeria. The importance of a professional development program for academic and non-academic staffs cannot be overstated. Professional development program helps academic and non-academic staffs to increase their knowledge and skills. Kulkarni (2013) suggested that training and development programs are germane to improved employees' performance at work, updating their knowledge, improving their skills and confidence level.

Poor Research Funding

Poor research funding has been identified as a major problem most public universities in Nigeria are faced with (Donwa 2006; Charles, Ijeoma & John 2009; Chikwe, Ogidi, & Nwachukwu, 2015). The inadequate funding of research programmes by the government has affected the science academics to initiate and conduct researches regularly. Ogunode (20220) observed that the academic staffs are saddled with the responsibilities of carrying out researches in the universities. Conducting research is one criterion for measuring their performance. Paul (2015) submitted that the conduct of research is one of the basic functions of tertiary institutions, which comprises the Universities, Polytechnics, Monothechnics and Colleges of Education. The academic staffs of these institutions are compulsorily required to carry out research activities as their promotions are primarily based on their research outputs. Apart from the academic staffs being promoted through research publications, research activities enhance their credibility, and status, and also add value both to their immediate community and the larger global community. Yusuf (2012) opined that the role of higher education research in national development cannot be overemphasized. However, researches in Nigerian institutions of higher learning are yet to make real impacts on the technological advancement of the country and the socioeconomic well-being of its citizenry. Ogunode, Jegede, Adah, Audu, & Ajape, (2021) concluded that inadequate research funding, unstable academic calendar/strike Actions, inadequate infrastructural facilities, brain drain, insecurity, corruption, poor technological advancement/poor ICT literacy, poor participation of the private sector in research development and lack of conducive working environment and modern laboratories as problems facing the administration of the research programme. Also, Yusuf (2012) opined that the constraints hampering the realization of research goals in the Nigerian higher education sector include brain drain problems, inadequate and irregular funding, poor motivation, poor or obsolete research infrastructure and rising workload resulting from deteriorating staff/student ratio. These

constraints have also led to low research productivity. Emunemu, (2009) opined that the quality of research being carried out by Nigerian academics is of low standard when compared to their counterparts in other parts of the world.

Poor Funding of Research Publication

Many Science academic spent their money on publishing their research paper after the research work because of the poor funding of research programmes in Nigerian universities. Charles, Ijeoma & John (2009) did a study and the result of the study revealed self-funding as a major source of research funding in Nigerian Universities, followed by the government sector and foreign agencies. Self-funding was identified as the most potent source of research funding accessed by University lecturers. The study showed that a greater percentage of lecturers, 246 (76.35%), had not benefited from research grants for many years. Inadequate funding of researches and stringent conditions attached to research grants are two major constraints to accessing research funds by lecturers (Charles, Ijeoma & John 2009).

Strike Actions

Strike action by different union groups in the public universities in Nigeria is a very enormous challenge facing the science academics in public universities. Ogunode & Abubakar (2020) opined that another challenge facing Nigerian higher institutions is the problem of an unstable academic calendar. The various unions and groups within the schools also contribute to the unstable academic calendar. They often embarked on strike action because of disagreement with the government on welfare issues. The strike actions always disrupt the academic programmes of the institutions, causing more cost and prolonging student academic programmes. Strike actions in the tertiary institutions of learning have constituted a serious threat to effective learning. During strike action in the universities, all teaching, research and academic activities are suspended. This makes it impossible for science academics to teach, carry out practicals within the schools and even perform community services to the communities.

Insecurity

Insecurity is a major problem that has affected university administration in Nigeria. Stakeholders in the universities are also affected. Many universities have been attacked leading to the death of many students, lecturers and researchers. Ogunode & Abubakar (2020) observed that the insecurity challenges facing the country are preventing effective administration and management of higher institutions in Nigeria. The insurgents in the Northern part of Nigeria have attacked many higher institutions disrupting their academic programme, killing students and destroying infrastructural facilities meant for teaching and learning. Obi (2015) observed that insecurity and terrorism have been a major challenge to the Nigerian government in recent times. The activities of the Islamic sect (Boko Haram) had led to the loss of lives and properties in the country, especially in the Northern part of Nigeria. Some of these activities include bombing, suicide bomb attacks, sporadic shootings of unarmed and innocent citizens, burning of police stations, and churches, kidnapping of school girls and women, etc. Kidnapping, rape, armed robbery and political crises, murder, and destruction of oil facilities by Niger Delta militants alongside the attacks carried out by Fulani Herdsmen on some communities in the North and South have contributed to the insecurity challenges facing the country.

Poor Internet Services and Unstable Power (Energy)

Internet services provided in many public universities are weak and of low quality. This low quality of services has hampered the development of research programmes in tertiary institutions. Science academics in these universities find it difficult to communicate and exchange real time information with other of their colleagues. The poor internet services have limited the application of ICT for teaching, learning and conducting research in various institutions. The internet services in Nigeria are weak and unstable. The service providers are not investing in quality ICT facilities and this is affecting the quality of services they are providing in the country (Malanga, 2015). The computer system needs internet services to enable online teaching and learning. Once these services are not stable or weak it affects the implementation of teaching and learning (Ogunode, Okwelogu, & Olatunde-Aiyedun, 2021). Adebayo (2020) noted that many students and academic staff cannot upload their notes and students cannot

receive e-note via their ICT facilities due to weak services. Malanga, (2015); Livinus (2013); and Ogunode, Adamu & Ajape (2021) submitted that internet service is what gives life to other ICT facilities to functions. In the absence of stable and quality internet service, other ICT facilities are useless. Internet services can be described as the fuel that the ICT needs to operate or move. The federal government agencies regulating the activities of the internet service provided are very weak, and this is responsible for the ineffectiveness of the internet service provision. Many higher institutions are not covered properly with internet services and this is affecting the application of ICT for teaching. Many academic staff with ICT facilities cannot effectively use them because of weak internet services (Idowu, & Esere, (2013). In some public universities, ICT facilities have been provided in the lecture halls to aid in delivering lectures through ICT but such ICT facilities are abandoned by the academic staffs who are supposed to be using them for lecturing due to poor internet connectivity or services.

According to Ogunode & Ayoko (2022), without access to reliable electricity, education becomes very difficult and the quality of services delivered becomes poor.

Energy is used for lighting lecturers` offices, lecture theater and laboratories. Energy enables powering of Air conditioners, fans and many more appliances which provides comfort in the offices of lecturers and students halls within the campuses. Energy is needed to power information and communication technology equipment like the computers and other science simulation equipment in the laboratories. Constant energy supply is critical for the development of the higher institutions. The importance of adequate and stable energy supply in the tertiary institutions includes; making implementation of teaching programme simple, fast and interesting, making implementation of research programme possible, making provision of community services programme economical and reliable, making school administration fast and effective.

Shortage of ICT Facilities

Science academics in some public universities are also faced with the challenge of shortages of ICT facilities such as laptops, printers, scanners, photocopiers, Computer systems and ICT softwares. Ogunode, Okwelogu, Olatunde-Aiyedun, (2021) concluded that inadequate ICT facilities in many public higher institutions in Nigeria also prevented many higher institutions from deploying ICT for the implementation of teaching, research and other academic services in Nigeria. Many public higher institutions in the country do not have adequate ICT to support e-learning, e-teaching and e-researching. This submission is confirmed by Livinus (2013); Idowu, Esere & Iruloh, (2017); and Ogunode (2021) that many tertiary institutions in Nigeria do not have ICT facilities to implement teaching programmes and many academic staff and students do not have access to functional ICT facilities to support their academic activities. Shortages of infrastructural facilities like hardware, software, bandwidth access, lack of skilled manpower, unstable power supply, high cost of ICT, poor computer literacy of students and academic staff, and poor implementation of ICT policies are the challenges and problems of deployment of ICT facilities by Public higher institutions during Covid-19 in Nigeria (Ogunode, 2020a; Ogunode, Adamu & Ajape, 2021; Ogunode, Babayo, Jegede & Abubakar, 021; Ogunode, Abubakar, Abashi, Ireogbu, & Longden, 2021; Olabisi, 2020).

Implications for University Administrators to Make Right Decisions for University Development and Sustainability

Based on the identified problems Science Academics are faced with in Nigerian public Universities. This paper hereby recommends the following s:

1. University administrators in Nigerian public universities should increase the funding of science programmes. This will help to develop the science programme in the Nigerian universities
2. More Science academics should be employed in public universities where there are deficits
3. Modern laboratories should be provided in public universities where they are needed for practical teaching and learning.

4. Universities administrators should provide adequate ICT facilities, boost the internet services and provide alternative power supplies in all public universities.
5. The government should implement agreements entered with different union groups in the public universities to prevent strike actions.
6. The government should address all issues that are causing insecurities across the country by employing and training more security men.
7. The government should motivate Science academics in public universities by increasing their allowances and salaries.
8. The government should direct TETFund to increase budgetary allocation for staff training and conference attendance. This will help to sponsor more Science Academics for staff training and exposure through international conferences.

References

1. Akinfolarin, A. V. & Ehinola, G. B. (2017) Academic staff in higher education (Case Study of Adekunle Ajasin University, Ondo State, Nigeria). *International Journal of Innovation and Research in Educational Sciences*, 1, (2), 123-127.
2. Bennell, P., & Akyeampong, K. (2007) *Teacher motivation in sub-Saharan Africa and South Asia*. DFID: London.
3. Chikwe, C. .K, Ogidi, R .C. Nwachukwu, K (2015) Challenges of Research and Human Capital Development in Nigeria. *Journal of Education and Practice*. Vol.6, No.28,
4. Charles P. A, Ijeoma A. A & John A. U. (2009). Lecturers' Access to Research Fund in Nigerian Universities: Challenges and Strategies for Improvement
5. Donna, P. A. (2006) Funding of Academic Research in Nigerian Universities. A paper presented at the UNESCO forum on Higher Education Research and Knowledge creation. November 29-December 1, 2006. <http://portal.unesco.org/education/fr/files>, July 2009.
6. Edokhamhen, E. & Ogunode N. J. (2020) Teaching Programme in Nigerian Higher Institutions: Challenges of Implementation and Way Forward. *American Journal of Social and Humanitarian Research*, 1(5), 82-100
7. Ebehikhalu N, O & Dawam P, (2017) Inadequacy of Teaching and Learning Infrastructure: Reason Nigerian Universities cannot Drive Innovations. *Australian Journal of Education and Learning Research SCIE Journals*.
8. Ezechi, N. E & Ogbu, C. C. (2017) Science Education in Nigeria: Challenges and the Way Forward. *International Journal of Progressive and Alternative Education*, 4(1), 1-11.
9. Ezechi, N.G. (2016) Revisiting secondary school science teachers' motivation: A positive step towards the transformation of Nigerian science education for global challenges. *Journal of Resourcefulness and Distinction*, 13, (1), 86-94.
10. Idowu, A. I. & Esere, M (2013) ICT and higher education system in Nigeria. *Academic Journals*, 8, (21), 2021-2025. www.academicjournals.org/journal/ERR/article_full.../D15191141507
11. Idowu, A., Esere, M., & Iruloh, B. R. (2017) Computer Accessibility, Usage and Lecturers' Perception of Innovative ICT based Assessment in a Nigerian University *Sustainable Transformation in African Higher Education*. Springer, 215-226
12. Huili, H. (2020) How to make the switch to online teaching more effective.
13. Livinus, E. (2013) Computer literacy and utilization among the academic and non-academic staff of Ebonyi State College of Education, IKWO. *Journal of Qualitative Education*, 9, (1), 1-5.

14. Malanga, D. F. (2015). *Use of information and communication technology: The 21st century for library and information professionals*. <http://works.bepress.com/donalmalanga/2/>
15. Ogunode, N. J & Abubakar, M. (2020) Higher Education in Nigeria: Challenges and the Ways Forward. *Electronic Research Journal of Behavioural Sciences*, 3
16. Ogunode, N. J., Yiolokun, I. B., &Akeredolu, B. J. (2019) Nigerian Universities and their Sustainability: Challenges and Way Forward *Electronic Research Journal of Behavioral Sciences*,
17. Ogunode, N. J., & Oluseun, D. J. (2020). Administration of professional development programme in Nigerian higher institutions: challenges and way forward. *Intercathedra* 3(44), 147–155. <http://dx.doi.org/10.17306/J.INTERCATHEDRA.2020.00102>
18. Ogunode, N. J, Okwelogu I, S & Olatunde-Aiyedun, T.G (2021) Challenges and Problems of Deployment of ICT Facilities by Public Higher Institutions during Covid-19 in Nigeria. *International Journal of Discoveries and Innovations in Applied Sciences*, 1, (4), 30-37
19. Ogunode, N. J, Jegede D, Adah, Audu E, I, Ajape T, S (2020) Administration of Research Programme in Nigerian Public Universities: Problems and Way Forward. *Riwayat: Educational Journal of History and Humanities*, 3, (2), 21-32
20. Ogunode, N, J &Aiyedun, T, G. (2020) Administration of Science Programme in Nigerian Higher Institutions: Issues, challenges and Ways Forwards. *Middle European Scientific Bulletin*, (6), 94 - 102
21. Ogunode, N. J. (2020). Administration of Public Universities in Nigeria: Problems and Solutions. *JurnalSinestesia*, 10, (2), 86-93.
22. Ogunode, N, J Okwelogu, I. S., Enyinnaya, O &Yahaya, D (2021) Academic Staff of Tertiary Institutions in Nigeria and the Problem of Insecurity. *Middle European Scientific Bulletin*, (18), 206-217
23. Ogunode N.J., Jegede& Musa, A. (2021) Problems Facing Academic Staff of Nigerian Universities and the Way Forward. *International Journal on Integrated Education*, 4, (I), 230-239
24. Ogunode N, J, Abubakar M, Abashi E, Ireogbu A, Longdet J (2021). “An Investigation into the Challenges Preventing Academic Planning officers from Effectively Using ICT in Federal University Wukari, Nigeria“ *Journal of Science, Computing and Engineering Research*, 2, (1), 147-154,
25. Ogunode, N, J, Babayo, I. B, Jegede, D & Abubakar M (2021) Challenges preventing Non-academic staffs of Nigerian Universities from using ICT effectively and ways forward. *Electronic Research Journal of Engineering, Computer and Applied Sciences*, 3, 39-50
26. Ogunode N. J, Adamu D. G, & Ajape T. S. (2021) Challenges Preventing Academic Staff from using Information and Communication Technology (s) for Teaching in Nigerian Public Universities and the way Forward. *Pindus Journal of Culture, Literature, and ELT*, 8, 5-15
27. Ogunode N.J. (2020a) Investigation into the impact of the COVID-19 pandemic on higher institutions in FCT, Abuja, Nigeria. *Journal of Social Science, Education and Humanities* <https://www.sciworldpub.com/journal/JSSEH>
28. Ogunode, N.J & Ayoko, V.O (2022) Implication of Unstable Power (Energy) on Administration of Tertiary Institutions in Nigeria. *European Multidisciplinary Journal of Modern Science*, 6, 10-18 <https://emjms.academicjournal.io/index.php/Volume:620XX>
29. Olatunde-Aiyedun, T. G & Ogunode, N, J. (2021) School administration and effective teaching methods in science education in north central Nigeria. *International Journal on Integrated Education*, 4, (2), 145-162.
30. Okwelogu, I. S, Ogunode N. J. & Abayomi, A. O (2021) Science Education in Nigerian Public

Universities: Challenges and way forward. *International Journal on Economics, Finance, and Sustainable Development*, 39-44

31. Paul. N. (2012) Research in Tertiary Institutions in Nigeria: Issues, Challenges and Prospects: Implication for Educational Managers, *Journal of Humanities and Social Science*, 6, (1), 45-49
32. Yusuf, A. K. (2012) An appraisal of research in Nigeria's university sector. *Journal of Research in National Development*, 10, (2), 98-119.