Multidisciplinary Journal of Academic Research and Development

Vol. 4. No. 2 November 2024

MJARD- Publication of Bayelsa State Polytechnic, Aleibiri

EDITORIAL BOARD

Chairman Editorial Board
Chief Wisdom Soreh
Rector,
Bayelsa State Polytechnic, Aleibiri

Editor in Chief
Professor Promise Mebine
Niger Delta University and DG
National Mathematical Center, Abuja

Engineer Godspower Odubo
Deputy Rector, Administration
Bayelsa State Polytechnic, Aleibiri

Associate Editor in Chief
Dr. Mansi Walamam Egbo
Director Research and Development
Bayelsa State Polytechnic, Aleibiri

Tuperekiye Ebimobowei Sese
Deputy Rector, Academics
Bayelsa State Polytechnic, Aleibiri

Assor Dalton Emmanuel
Coordinator special Duties
Bayelsa State Polytechnic, Aleibiri

Dr. Sawyerr George Oyinkepreye E.
Polytechnic Librarian
Bayelsa State Polytechnic, Aleibiri

Dr. Yaguo Eremasi Benamine Ikele
Director Academic Planning
Bayelsa State Polytechnic, Aleibiri

Jason Goldie
Dean School of Applied Science
Bayelsa State Polytechnic, Aleibiri

Okoro Kingeorge
Dean School of Foundation studies
Bayelsa State Polytechnic, Aleibiri

CONSULTING EDITORS

Professor Solomon Ebobrah
Faculty of Law,
Niger Delta University, Wilberforce Island
Amassoma, Bayelsa State.

Professor Gideon O. Abu
Department of Microbiology University
of Port Harcourt Choba, Rivers State.

Professor Onyewuchi Akaranta
Department of Industrial Chemistry, University of Port Harcourt Choba, Rivers State.

Professor Victor Nwachukwu
Department of Library Science
University of Nigeria Nsukka Enugu State.

Professor Arikawei Righteous Apuega
Department of Educational Foundation,
Niger Delta University, Wilberforce Island,
Amassoma, Bayelsa State.

Dr. Charles Ariye
Department of History and
Education, Isaac Jasper Boro
College of Education, Sagbama
Bayelsa State

Dr. Eni-yimini Solomon Agoro
Directorate of Research and
Quality Assurance of the
Federal University, Otuoke
Bayelsa State, Nigeria.

Dr. John Kalama
Department (Political Science/Pub
Administration, Federal University
Otuoke, Bayelsa State, Nigeria

Dr. Opaminola Nicholas Digha
Department of Geography
Isaac Jasper Boro College of
Education, Sagbama, Bayelsa State.

Dr. Ebimobowei Appah (FCA)
Department of Accountancy Education,
Isaac Jasper Boro College of Education,
Sagbama. Bayelsa State.

Professor Prince Ebiowei Kainga
Department of Agricultural
Economics, Niger Delta
University, Wilberforce
Island, Amassoma.

EDITORIAL POLICY

The Multidisciplinary Journal of Academic Research and Development (MJARD) is an official publication of the Bayelsa State Polytechnic, Aleibiri. It is an international peer review journal with the mission to disseminate to the global community high quality research findings, scientific thoughts; professional reviews aimed at contributing to knowledge and the development of the society. The journal is committed to timely publication of clear and precise field based, experimental, theoretical research findings and professional/intellectual ideas thereby providing enabling and sustainable international platform for interactions among researchers, academicians and professionals. While the journal ensures timely publication of papers, quality will not be compromised but publication ethics and international best practices will be strictly followed. The editorial board is poised to publish the journal biannually;

CALL FOR PAPERS

The multidisciplinary journal of academic research and development hereby invites high quality and original research manuscripts of field based studies, experimental or theoretical research, professional review and case studies which are aimed at proffering solution to problem confronting the society or contributing to the development and advancement of knowledge, for publication in its forth coming edition.

AUTHOR'S GUIDELINES

1. All papers submitted for publication must have a title page; the title page should include a regular title of the paper, author(s) full names starting with the first name followed by the middle and surname, institutional affiliation, Corresponding author's email and phone number.
2. All manuscript submitted for publication in the Journal must be the original work of the author(s) and is neither published nor submitted for publication elsewhere.
3. After a double-blinded peer review and acceptance for publication, copyright ownership of the manuscript must be transferred officially to Editorial board of the journal.
4. Manuscripts must not be less than 5 and not more than 14 pages (including references and abstract, typewritten in Time New Romans font type and 12-point font size on A4 paper with 1.5-line spacing
5. The study must be supported by citations and references. References must be arranged in alphabetical order and must be consistent with the context citations.
6. Work not cited in the content should not be listed in the references.
7. Citations in the manuscripts should adopt the latest (6 0r 7) edition of American Psychological Association (APA) format.
8. Papers should be submitted electronically to the journal paper submission e-mail (mjardeditorial@gmail.com)
9. All the authors are responsible for preparing manuscripts which are clearly written and should contain no spelling, grammatical or punctuation errors.
10. The tone of the article should be very professional, free from the use of clichés, jokes or personal jargons
11. Authors should ensure that all arithmetic calculations, statistical and numerical data, abbreviations and terminologies are accurate and consistent.

12. Chemical equations must be written in the modern nomenclature of International Union of Pure and Applied Chemistry (IUPAC).
13. The abstract should not be more than two hundred and fifty words and should contain study background statement, the aim of the study, methodology, the main findings or idea of the discussion as well as conclusion and a recommendation.
14. The article must be a high quality research paper, which has gathered and integrated relevant and appropriate information from personal experiences, researches, professionals' publications and academic sources to the development and advancement of knowledge and society.
15. The Journal is an Open Access journal. Everyone with access to the Internet will have free electronic version of the full text (PDF) of the articles.
16. Every article submitted to the journal for publication must be accompanied with #5,000 paper review fee.
17. Payment of the compulsory review fee is not a guarantee that submitted paper has been accepted for publication.
18. Fees and Charges**:** Free publication. Authors are to only pay peer review fee of #5,000 only.
19. The journal is published biannually; June and December precisely, hence all papers for publication in any issue of the journal must be submitted three months ahead of time.
20. All papers submitted for publication at a date later than submission deadline attract (#5000) extra processing charge.

For enquiries please call 08066677173

TABLE OF CONTENTS

The Media and Reportage of Election Vote Buying in Nigeria: The Media Slant
Paleowei Zikena Cletus **1**

Accounting Information and Decision Making in The Banking Sector (Bank of Agriculture)
Dokubo Otonbarapagaha Ebifamini **10**

Hybridity And Feminism in Modern African Poetry
Patience Ayebaemi Zuokemefa & Deinmotei Erefaghe Igbe **17**

Comparative Analysis of Microbial Limiting Nutrients in Corn Cob and Husk Composts For Bioremediation of Petroleum Hydrocarbon Polluted Soil
Egbo Walamam Mansi & Eremasi Yaguo Benjamin Ikele **26**

Enforcement Of International Humanitarian Law: Nuremberg and Tokyo Trials
Faith. Allison- Kulo **32**

Performance Characteristics and Economic Analysis of Broilers Subjected to Time-Limited Feeding Protocol
Geoffrey Etekpep **39**

Automated Web-Based Student Project Verification and Validation System
Efe Darel Gowon Kokogbiya & Assor Dalton Emmanuel **44**

1D Soil Electrical Resistivity Survey, Tomography and Their Outcome on Groundwater In Yenagoa
Eniye Mienye **52**

Optimizing Corps Members Posting Based on Area Specialization Through Web-Based System
Assor Dalton Emmanuel & Kilakime Warikaramu-Ere Bridget **59**

The Importance of Local Construction of Multiple Test Point Module for Electronic Practicals
Festus Okosi & Yabefa, Ebimobowei Tonbie **66**

THE MEDIA AND REPORTAGE OF ELECTION VOTE BUYING IN NIGERIA: THE MEDIA SLANT

Paleowei Zikena Cletus
Department of Mass Communication, School of Management Sciences
Bayelsa State Polytechnic, Aleibiri
Email: manzeaky@gmail.com Phone No. - 08037744020

Abstract
The Nigerian democratic experience since 1999, like some other African countries, is associated with political bottlenecks and anomalies especially with the issue of how to conduct free, fair and credible elections. There is hardly any election passes by without the records of electoral malpractices especially votes buying. Vote buying as a major form of electoral malpractices is becoming so endemic in Nigeria electoral processes. The problem of vote buying is fast undermining Nigeria's democratic values. The threat has damaged Nigerians sense of integrity. This study is therefore aim to challenge, evaluate the threat of vote buying in Nigeria's electoral system and the media's reportage of vote buying in Nigeria using the journalist's slant. The paper has identified the nature and manifestation of vote buying in Nigeria and some legal instruments that criminalize vote buying. It has also appraised the implication of vote buying on democratic development in Nigeria. The study has also discussed the role of the media in politics and governance as well as the responsibility of the journalists and the media in creating public awareness on the need to vote right candidates that can ensure good governance during election. The paper concludes that the issue of vote buying is an obstacle and huge hindrance to the conduct of credible elections that is widely acceptable even to the international community. The role of the media in reporting vote buying is therefore key to reducing and curbing vote buying owing to its agenda setting role to the society as well as its educative function to the society.
Keywords: Mass Media, Elections, Vote buying

1.0 INTRODUCTION

1.1 Background of the study

An election is a formal group decision making process by which a population chooses an individual or multiple individual to hold public office. Elections have been the usual mechanism by which modern representative democracy has operated since the 17th century. Elections may fill offices in the legislature, executive and in same instance judiciary and the regional and local governments. This process is also used in many other private and business organizations and corporations.

The global use of elections as a tool for selecting representatives in modern representative democracies is in contrast with the practice in the democratic archetype, ancient Athens where the elections were considered oligarchic institutions and most political officers were filled using sortation also known as allotment by which office holders were chosen by lot. Election reforms describe the process of introducing fair electoral systems where they are not in place or improving the fairness or effectiveness of existing systems.

Election is one of the pillars of democracy and necessary condition for democracy. It gives legitimacy and political authority to every administration. Sandbrowk (1998) posited that elections and the struggle for power are essential because it gives the oppressed the opportunity to put the question of alternative ideologies on the agenda and therefore constitute an important stage in the socialist quest to extend democratic control to the social and economic as well as political. It is a medium for the expression of the core principles and purpose of democracy such as the sovereignty of citizen's freedom, choice and accountability on the side of the political leaders. However, the sole purpose of democracy is the political quality of all citizens. An election must be free and fair for that to take place. The notion of free and fair election expressed several conditions including absence of manipulation, vote buying and all forms of elections malpractice. (Birch, 2011)

Okoie (2005) posits that vote buying is a new phenomenon introduced in Nigeria electrical process as a result of the desperation of political candidates and parties quest to win

by all means. It has become a widespread practice in Nigeria where democracy has struggled to be fully consolidated due to the country`s complex political landscape and the entrenched corrupt political class, where acute socio-economic hardship persists. vote buying traps citizens in self-sabotaging clientelist relationship with political leaders. The buying and selling of votes harms democracy. It interferes with the independence and right of voters to fairly assess candidates for electoral offices which directly determine the quality of governance and social contract that citizens will experience.

Ojo (2008) reveals that vote buying only guarantees limited, elections –bound benefits for a few while jeopardizing the long-term fortunes of the majority. It contributes to keeping politicians off the hook for abusing public office when elected, and traps vulnerable voters in self-sabotaging and discouraging or blocks honest people from entering into politics because electoral success becomes associated with dishonest and unethical practices. Vote buying mostly relies on government funds. It provides a ready excuse for fraud and embezzlement and can lead to widespread corruption in the public sector.

1.2 Statement of the problem

The problem of vote buying is fast undermining Nigeria's democratic values. The threat has damaged Nigerians sense of integrity. The unfettered expression of the voters will have been purposefully curtailed. The issue calls into question the election's legitimacy, integrity and credibility. Vote buying results in terrible governance; because the mechanism that produced the leader was unconstitutionally sound, the voters might not have the right to challenge it when things go wrong and the promises made are not kept. Sometimes, the cost of voting greatly outweighs the rewards, and it is the economy that suffers, not the kids or the future. Politicians then reclaim these funds from the system as a cost of running for office. This study is therefore aim to challenge, evaluate the threat of vote buying in Nigeria's electoral system and the media's reportage of vote buying in Nigeria using the journalist's slant.

2.0 LITERATURE REVIEW

2.1 Theoreical Framework

Agenda setting theory

This paper is anchored on the framework of the agenda setting theory. The agenda setting theory explains how the media shapes public opinion by selecting and emphasizing certain topics over others. The media does not necessarily tell people what to think, but rather what to think about

The influence of media affects the presentation of the reports and issues made in the news that affects the public mind. The news reports make it in a way that when a particular news report is given importance and attention over other news, the audience will automatically perceive that the most important news and information are given to them. The prioritization of which news come first and then the next are set by the media according to how people think and how much influence it will have on the public.

Agenda setting occurs through a cognitive process known as "accessibility". Media provides information which is the most relevant food for thought, portrays the major issues of the society and reflects peoples mind. The media could highlight the threats vote buying pose to societal growth and development and consciously discourage the people from engaging in vote buying.

2.2 The Role of the media in politics and governance

The media has a powerful influence on political sphere, as it shapes public opinion and lays the foundations for political beliefs. Sometimes, the media is referred to as the fourth estate of the rem. In advance democratic countries, the media plays a crucial role during elections and in times of change. Therefore, politicians and political parties are particularly sensitive to their media presence and the media coverage of their public appearances. (Domminick, 2010)

The relationship between politics and the mass media is closely related to the debate about freedom of speech. The Universal Declaration of Human Right adopted by the United Nations in 1998 reads "everyone has the right to freedom of opinion and expression; such rights include freedom to hold opinions without interference and impart information and idea through any media regarded as frontiers"

In democratic societies, the media plays a particularly significant role, as it is a communication channel which ensures the exchanges of opinions and points of view between the people in power and the general public. In liberal democracy, the media facilitates the public discourse, informs the public, represents the public and acts as a watchdog of the branches of government. Analyst highlights the role of the media in the support of true democratic society. German Intellectual, Juergen Hebermes (2015) defines the media as a space for public discourse which must guarantee universal access and rational debate in society.

As a Watchdog in the Political World, the media has the task of criticizing decision makers in society. Journalists can fulfill this task only if they are independent. On the other hand, dependence on powerful structures and financial resources can handicap the media`s ability to be an effective watchdog in political life. Although in democratic society, governments and political parties do not put direct pressure on the media, the competition and the free market rules create different restructures for journalists and their employers. (Sambe, 2008)

In democratic countries, the freedom of press is guaranteed by law. The absence of interference from the state in the freedom of communication and expression is mandatory aspect of democracy. The government may protest information from the public disclosure by classifying it as sensitive, classified or secret. The so-called sunshine laws regulate the government obligation to disclose information about its work and meetings. International organizations also seek to guarantee freedom of speech worldwide. Reporters without Borders (RWB) is an NGO that aims to prevent repression and harassment of journalists, state monopoly and censorship in the media. (Omotosho, 2008), Kitschatt, 2007.

Duker (1999) argued that the assessment of the mass media in politics is anchored on the fundamental right to receive and impart information. This becomes not only the standard for assessing the role of the media but also the neglected role of states to uphold the antics of the right to know in an ideal democracy. The natural law of doctrines is used to propagate the inalienable right to know and impart information, adopted in 1986 and ratified in July, 1990 which makes it clearer that every individual shall have the right to receive information and shall have the right to express and disseminate his opinions within the law.

However, it cannot be overemphasized that there is no election without the media and there is no democracy without the media to receive and impart information. Nigeria is known for its liberalism which dictates free flow of information, yet the country's media according to Duckor (1999) have been performing within air of regulated freedom. He insists that there is a mutual distrust existing between the state and the media in Nigeria which has negated its constitutional relationship to the media and its citizenry. It behooves the media in Nigeria to accept the responsibility of informing the Nigerian public on how vested interests have become policy matters, how obvious facts have been condoned as law and order, how cold-blooded murderers have been perpetuated as encounters. Duckor (1999) argued that the role of the media in any democratic society is to educate, to inform and to entertain. There seems to be a serious angle to the public enlightenment dimension of the role of the media in the electoral process. Agba (2007) observed that people are eager to join a plethora of electoral malpractices without realizing that it is they who will be victims of bad government resulting from involvement in electoral fraud. Agba (2007) estimated that almost 4.3% of our population is still politically illiterates, a rather large group which requires the special attention of the media and it goes to share the extent of work needed to be done by the media.

3.0 RESEARCH METHOD

3.1 Nature of the research

This research is qualitative in nature; hence secondary method of data collection was adopted to collect information from pre-existing sources. The documentary method which is based on the descriptive examination of documents that contain crucial information about the topic being studied. Payne and Payne (Mogalakwe, 2006). describes the documentary approach as the strategies used to categorize, investigate, evaluate, and highlight the limitations of physical sources, most typically written documents whether in the private or public domain. The application of documentary methods relates to the investigation of records that contain information about the topic under

research (Mogalakwe (2006). Social scientists have the wrong idea that professional historians, librarians and information sciences specialists dominate this type of research methodology. Umar (2016) opines that certain social scientists "frequently depict the qualitative approaches as a pointless endeavor, incapable of aiding in the study of social phenomena let alone prescribing for its resolution or amelioration. Bumhan et. al (2004) contend that it is therefore "rather remarkable that the majority of social research techniques texts fail to provide documentary materials more than a fleeting reference".

3.2 Identification of legal instrument against voting buying, its nature and manifestation in Nigeria recent elections. Is suggested

Vote buying is prohibited in Nigeria. Article 130 of the Electoral Act 2022 as amended states that:

> *A person who – (a) corruptly by himself or by any other person at any time after the date of an election has been announced, directly or indirectly gives or provides or pays money to or for any person for the purpose of corruptly influencing that person or any other person to vote or refrain from voting at such election, or an account of such person or any other person having voted or refrained from voting at such election; or (b) being a voter, corruptly accepts or takes money or any other inducement during any of the period slated in the paragraph (a) of this section, commits an offence and is liable on conviction to a fine of N100,000 or 12 months imprisonment or both.*
>
> *Similarly, the 2018 Revised Code of Conduct for political parties in Section VIII (e) provides that, all political parties and their agents shall not engage in the following practices, buying of votes or offer any bribe, gift, reward, gratification or any other monetary or material considerations or allurement to voters and electoral officials".*

Notwithstanding the legal prohibition, vote buying continues to be a widespread practice in Nigeria elections in recent times. Although vote buying has become ubiquitous in recent elections, its history predates the return to democracy in May 1999. There have been allegations of vote buying in the electoral history of Nigeria. It was rife during the social Democratic Party presidential primary in Jos in 1992. Indeed, vote buying was part of the reason adduced by Ibrahim Badamasi Babangida for annulling the June 12 1993 presidential poll which was hailed as the freest and fairest elections in Nigeria's history. (Keefer, 2004)

Even before the presidential elections, and indeed at the party conventions, we had full knowledge of the bad signals pertaining to the enormous breach of the rules and regulations of democratic elections… There were proofs as well as documented evidence of widespread use of money during the party primaries as well as the presidential election … Evidences available to government put the total amount of money spent by the presidential candidates at over two billion, one hundred million naira (N2.1 billion). The use of money was again the major source of undermining the electoral process. (Ezeani, 2005)

Vote buying has been an integral element of money politics in Nigeria. Recent experiences however show that vote buying takes place at multiple stages of the electoral cycle and has been observed eminently during voter registration, the nomination period, campaigning period and Election Day. It is predominant on Election Day, shortly before or during vote casting. Like a typical market place, the politicians, political parties and partly agents are the vote buyers while prospective voters are the sellers. The commodity on sale is the vote to cast while the medium of exchange could be monetary and non-monetary items. The market force that determines the value or price of a vote is the level of desperation of politicians to win in a locality. Although money and other valuables can be used to effectuate vote buying, political actors have adopted two main approaches to buying votes no election day. (Sha, 2008)

The first is the cash for vote approach. It involves giving or promising the prospective voter some agreed amount of money well before the individual casts the vote at the polling station. The payment is done before the actual voting and could be within the vicinity of the polling station or farther away. The "settlement" is made secretly or in the open often, the vote buyers demand evidence of ownership of voter's card and assurance that the voter will vote for their party before

offering the money. In this approach, trust is key to the contract. It is also known as the pre-paid method of vote buying

The second approach is the vote for cash. It involves giving or rewarding the voter with the agreed amount of money or material compensation after the individual has shown evidence that the voter had voted their party. There are several ways the voter can prove to the vote buyer that he voted for the agreed candidate. One method is where the vote shrewdly displays the ballot paper that he/she thumb printed in favour of a particular party, so that the party agent standing strategically nearby can confirm compliance with the unholy contract as emerged from the cubicle at the polling station. Another method is for the voter to photograph the thumb printed ballot paper to show as evidence. Therefore, compensation in cash and/or kind can occur either immediately or at the close of balloting and may take place within the vicinity of the polling station or at an agreed place. In this approach, evidence is key to the consummation of the contract. This approach is also known as the "see and buy" or the post-paid method.

The vote buying practice, which is completely antithetical to the ethos and norms of democracy, has become a common feature of party primaries and general elections conducted in recent years in Nigeria. For example, during the All Progressive Congress (APC) Presidential Primaries in Abuja before the 2023 general elections, it was reported that "over 8,000 delegates who participated, allegedly made USS $30,000 each from the candidates. Delegates were supposed to have received USS $28,000 each from the Alhaji Atiku Abubakar group of The Peoples Democratic Party also received USS $25,000 each from Gov. Nyesom Wike group. Given that more than 8,000 delegates were reported to have attended the primaries, the competing camps could have spent more than USS $120 million and USS 224 million respectively on vote buying at the primary stage.

There were widespread allegations of vote buying in the off-cycle governorship elections in Bayelsa State, Kogi State and Imo State in 2023. In the November 11th 2023 gubernatorial elections in Bayelsa State, observers reported massive vote buying by the two main political parties, the PDP and the APC. The parties were accused of giving N100,000, N80,000, N70,000, N50,000, N20,000 and N10,000 depending on the level of competition in that polling unit. Similarly, there were massive acts of vote buying in Kogi State and Imo State and in some cases as reported; there was massive rigging and hijacking of voting materials in Kogi and Imo State. The impunity of vote-buying is becoming the norm in Nigeria's electoral politics with political parties trying to outwit each other in the amounts paid to voters.

3.3 Implications of Vote-buying on Democratic Development in Nigeria

One of the major implications of vote buying is that it is capable of sparking off corruption amongst politicians after voting them into office. The danger is that politicians would firstly recoup all the money invested during nomination of candidates, party primary election and campaigns. This ugly development will definitely result in looting of state treasury. Vote buying attached to materials or cash incentives, apart from increasing financial burden on politicians, has its consequences on good governance in Nigeria. It serves as a springboard to catapult unsalable, incompetent elements and unsuitable political parties to public-elective offices. Vote buying enslaves vulnerable voters who are paid to support candidates of a particular party. It restricts their freedom of choice and blurred their rationale decision-making skill. The viral nature of vote buying in 2023 general elections stimulates genuine concern about the leadership quality, capability of service delivery and effectiveness of emerging democratic institutions and ensuring results of the despicable elections conducted in Nigeria. (Baidoo 2018) Sarkariyan (2015).

The populace is willingly being starved to death through incompetence and leadership gaps; therefore, a vigorous government driven poverty reduction initiative is an appealing strategy as a palatable option to curb vote-buying and fight poverty in the country. 2023 poverty rate index revealed that 97,895,986 people in Nigeria live in extreme poverty occasioned by unemployment rate in 2023 was 27.4% and forecast to rise to 42.5% in the year 2024. Nigeria was declared poverty capital of the world (World poverty clock 2018) illiteracy is the worst persistent disease afflicting less educated voters. In 2018, illiteracy rate was 30% of the population, which comprised 65 million Nigerians and a survey on Nigeria conducted by the United Nations Children's

fund indicates that the population of the out-of-school children in Nigeria has risen from 10.5 million to 13.2 million in 2019, the highest in the world. (Premiumtimesng.com.google.com). (Westminister Foundation for Democracy, 2018)

Civil Society Organization (CSO) are genuinely canvassing for robust legislative and commensurate sanctions against culpable elements, stressing monitoring elections through playing the role of preventing vote buying at the polling stations. The CSOs have not resisted nor overtly protest against the practice other than the subtle approach as vanguard for good governance. They advocate for voter education and wider civil education programs are veritable tools to widening voters' horizons on how vote buying impacts negatively on their future wellbeing. The phenomenon of vote buying as a pestilence is a symptom of grievous challenge bordering on the integrity, credibility and legitimacy of electoral processes. It is a complex crime that involves political elites, the presidency, the legislative, the judiciary, political parties and all other security agents and anti-graft supervisory agencies as accomplices. (Yan de Walk, 2003)

Therefore, in every regime, the issue is not about vote buying rather, it is purely located in conspicuous absence of respect for the rule of law. The subsisting law is adequate to checkmate defaulters and address the menace, but its enforcement, unfortunately, is completely zero on the scoreboard. The hegemonic leadership, suppression of the populace and extreme application of coercion to sustain the grip to political power do not create political ventilation for freedom of expression nor would CSOs resistance of the social plaque, make a change without drastic actions. Despotism and lack of political will would smash all resistance on the path of this scourge. (Yagboyaju, 2011)

Governments at all levels should have the political will to fight the vote-buying menace; bodies like the National Orientation Agency, INEC, Civil Society Organizations, the media, social organizations (churches, mosques and community based associations) and all internal and external stakeholders in Nigeria projects should declare total war against illiteracy and this pestiferous plague dubbed "vote buying" that blindfold the citizenry to rekindle the moral values of the people, so as to enhance sustainable development in the country. Vote buying rears underdevelopment, stunts public service delivery to the people, institutes unpopular political party with transactional leadership into power, raises despotic river emboldens ineptitude and bad governance. The sensitization campaign should focus on educating the electorates about the danger in accepting gratifications and selling their voting rights for peanuts mortgaging their future and the future of unborn generations. Strengthening with vigour the genuine process of sustaining precepts of democracy and stressing the harmful effects of plutocratic politics to transparency and accountability and protection of freedom of choice in elections.

The journalist angle

The journalist professional has the responsibility of the collection, collation and publication of news. A direct result of this role is that they also influence public opinion as well as setting agenda for public action. Indeed, they galvanize the society towards identified public goals. In Nigeria`s case, the media plays a pivotal role in mobilizing the citizenry toward the national goal of establishing a democratic society even at the risk of their lives.

The journalist occupies a critical position in any media organization because the professional responsibility. The role is more vividly understood when it is viewed against the background that the mass media offer the widest and fastest means of disseminating information. Journalists influence opinion formation, perception building and social mediation. They act as a mirror with which the society can view itself while also influencing social realities. Indeed, they provides a free market for contending groups to express opinions or canvass support especially in a multiparty democracy like Nigeria. In this regard, it should be noted that this contest of dominance is highly intense and the journalist, more often determines which opinion predominates.

Counting from the return to civil rule on 29th May, 1999, Nigeria has held series of general elections apart from sundry re-run elections and off cycle election. Out of the series of general elections conducted only the 2011 general elections met both the local and international standard. Even though, there were skirmishes here and there. (Collier, 2000), Gronke, 2000.

But it is worrisome how each general election was worse than the preceding one (2019 was worse than 2015, 2007 was worse than 2003 and 1999, and the worst was the 2003 general election. This distributing trend could show that our country is fairing very badly at each passing election. This arguable could mean that our leaders seem to have forgotten that conducting a free and fair election is vital to the growth and development of any democratic process.

However, in the world today, all forms of media and their tools are considered important factors that promote democracy and good governance. Through the media, the voice of the people, as well as their thoughts on political issues is resonated. It is imperative to urge that there seems to be a synergy between the media tools available today and the political life of people, and it typically sets the stage for a potent interactive and virulent version of political communication.

Broad categories of the traditional media tools which includes radio, television, newspaper and magazine and the new media tools (social media, instant messaging services and Big Data Analytical tools to mention a few.

Moreover, the role of the media in today`s political space is somewhat indispensable to all stakeholders. The Electorate, Political Parties, the Electoral Management Bodies (EMB), civil societies, media and the international community all find use for it.

The issue and question of education, information mobilization and monitoring has also become a crucial factor in the realization of the national objectives in the context of the electoral process. This is as a result of the ugly incidences of various forms of electoral malpractices which have repeatedly threatened the possibility of credible elections and national integration in Nigeria.

Iredia (2007) the former Director General of Nigeria Television Authority (NTA), states that, "the people must be assisted to premise their choices of rationally and vote wisely during elections. They must have all information that is needed to elect the right candidates who can ensure good governance. Where such public awareness is lacking, those of us in the media must accept a share of the blame of failed elections in Nigeria. (p.12)

4.0 CONCLUSION

Vote buying is one of the factors militating against political development and sustainability of democracy in Nigeria. The country is practicing a "patronage democracy", a carrot and stick relationship between vote buyers and vote sellers in consolidation of commercialization of the policy. The quantum of money in circulation during election militate against political development. Vote buying is prevalent in Nigeria because an average voter in the country is poor and cannot resist the charming effects of uncontainable electoral bribes in cash or kind and tantalization of voters with job opportunities purposed to exist and the political elites disposition to capitalize on the weak. Voters unity in vulnerability to exploit the situation to render them politically feeble to control their rights to vote for candidates of their individual choice.

Poverty, unemployment and illiteracy have been identified by scholars as the major causes of vote buying. The study argues that electoral fraud is fundamentally a derivative of vote buying. Vote buying is the origin of bad governance, facilitator of imposition of wrong and inept group of unsalable persons to find spaces in governance. Insecurity of lives and properties, disunity among ethnic groups, secessionists agitations from various ethnic associations, the massive bloodletting in all parts of the country, and examined deficit of infrastructures are the products of vote buying. The plaque generated inept leadership and ineptitude yields poverty, unemployment and illiteracy. (Elaigwe, 2006)

Most importantly, the media serve as a yardstick to measure whether a government has performed or not which invariably determine the voting behavior/pattern of the citizen. It has also highlighted the consequence and dangers of vote buying to the development of any society. Vote buying damages the quality of democracy and undetermined norms of political liberty and political equality. The politicians diminish the legitimacy of electoral outcomes by giving losers usually opposition parties, reason to think that the vote was fraudulent.

Undoubtedly, the mass media in Nigeria has come of age and the use of both traditional and digital media for electioneering purpose has further created or widened the participation among millions of Nigerians.

REFERENCES

Agha, P.C. (2007). Role of Mass Media in electioneering developing context. In, NwosLI, I (Ed). *Communication for sustainable human development* (pp) Enugu. African Council lhr Communication Education.

Baidoo, F. L, Dankwe, S. & Eshun, I. (2018). Culture and Vote buying and its implications; range of incentives and condition's politicians offer to electorates. International Journal of Developing and Emerging economics, 6(2), 1 – 20.

Birch, S. (2011). Electoral Corruption Briefing paper IDCR. Retrieved from http://repository essex.ac.uk/4484/1/05-11. 27 February, 2019.

Bumhan, E, Savisa, L. and Michael, C. (2004) Political Values and Vote buying in Africa. A Disturbing dimension: Cambridge; Cambridge University Press.

Collier, P and Vicente, P.C (2000). Votes and violence evidence from a field experiment in Nigeria. University of Oxford and BREAD, Working Paper.

Dominick, J.R. (2010). Dynamics of Mass Communication. New York. Random House.

Dukor, M. (1999). The State and the Media in Africa. In Dukor, M. (Ed). Philosophy and politics discourse on values and power in Africa, (pp.). Lagos, O.O.P Ltd.

Elaigwe, J.I (2006). Causes Manifestations and Consequences of Electoral Violence in Nigeria. Text of a presentation at the National Conference on Strategies for Curbing election-related Violence in Nigeria, organized at Abuja by the Centre for Democratic Research and Training, Mambayya House, Bayero University. Kano. Retrieved on 23rd of April.

Electoral Malpractice-lessons-TesTech. https: //www.fes.com>lessons>electoral.

Ezeani, E.O (2005). Electoral Malpractices in Nigeria. In Onu.G & Momah A (Ed). Electrons and Democratic Consolidation Nigeria, Nigerian Political Science Association, Lagos.

Federal Government of Nigeria (2022) Electoral Act 2022 as amended.

Gronke, P. and Hicks, J. (2000). Reexamining Voter Confidence as a Metric for Election Performance. In Annual Meeting of the Midwest Political Science Association, Chicago, III

Hassan, M.M (2011). Politics and violence in Gombe State: a case study of the 'Kalare' Phenomenon. M.Sc. Thesis submitted to the Department of Political Science, Ahmadu Bello University, Zaria, Nigeria.

Iredia, Tony.O. (2007). Information Dissemination on Voters Mobilization and Election Monitoring in Nigerian electoral process. In Ogun, M(ed). Improving the fortunes and destiny of Nigeria through the Ballot Box, Abuja, Publication of Catholic Laity Council of Nigeria.

Juergen, H. (2015), Election Surveillance, Integrity and Acceptability. New York, Oxford University Press.

Keefer, P. (2004). Clientelism, Credibility and Democracy. Retrieved on 22nd March, 2019 from sitesresources.worldbank. org) Resources.

Kitschett, H.& Kinson, S. (2007). Patrons, Clients and Policies: Patterns of Democratic Accountability and Political Competition. New York: Cambridge University Press.

Mojalakwe, P. (2006) Determinants of voting behavior in Nigeria, Practical perspectives. Onitsha, Africana FEP Publications Ltd.

Ojo, O.E. (2008). Vote buying in Nigeria. In Adetula, V. (ed), Money and Politics in Nigeria, International Foundation for Electoral System, Abuja.

Okolie, A.M. (2005). Electoral Fraud and the future of elections in Nigeria 1999-2003. In Onu, G. & Momoh (Eds). Electrons and Democratic Consolidation in Nigeria. Nigerian Political Science Association, Lagos: A-Triad Associates.

Omotosho, M. (2008). Electoral Violence and Conflict in Nigeria the 2007 elections and the challenges of democratization. Paper presented at the 27th Annual Nigerian Political Science Association (NPSA) conference held at Benue State University, Makurdi, Nigeria, 16-19, August.

Payne, P. (2006). Identify politics in multidimensional environment. New York, Columbia University Press

Sambe, J.A. (2008). Introduction to Mass Communication practice in Nigeria. Ibadan: Spectrum Books Limited.

Sandbrook, R (1998). Liberal Democracy in Africa. A socialist Revisionist Perspective. Canadian Journal of African Studies. Doi:10-2307/485904 http://dx.doi.org/10.2307/485904.

Sha, D.P. (2008). Vote buying and the Quality of Democracy. In Adetuba, V (Ed). Money Politics in Nigeria. Abuja. International Foundation for Electoral system.

Umar, Y. (2016). The impact of Social Networking sites on political attitudes and behavior. Lagos: Longman Nigeria PLC.

Westminister Foundation for Democracy (2018). Cash for Votes: Political legitimacy in Nigeria: Retrieved on 6th of April from http//www.opendemocracy.net/gram-matenga/Cash-for-votes-political-legitimacy-in-Nigeria.

Yagboyaju, A.D (2011). Nigeria's Fourth Republic and the Challenge of a faltering democratization. African Studies Quarterly. Vol. 12, pp. 93-106, Retrieved 25th February 2019 from http://sites.clas.ut.edu/africa-asq/files/yagboyaju.v1213.

Yan de Walk, N. (2003). Presidentialism and clientelism in Africa's Emerging Party Systems. *Journal of Modern African Studies*. Vol. 41. pp.297-319.

ACCOUNTING INFORMATION AND DECISION MAKING IN THE BANKING SECTOR (BANK OF AGRICULTURE)

Dokubo Otonbarapagaha Ebifamini
Bayelsa State Polytechnic Aleibiri, Ekeremor, Nigeria.
atonbaradokubo@gmail. 08030598313

ABSTRACT
The main aim of this study is to examine the effectiveness and the importance of the use of accounting information and decision making in the bank, using Bank of Agriculture in Yenagoa, Bayelsa state as a case study. Data were collected through primary and secondary sources. Survey data were obtained from respondents using questionnaire. The collected and validated questionnaires were analyzed using frequency tables and percentage. While the hypotheses were tested using chi-square statistical tool. The result of the findings reveal that accounting information is a tool for decision making, hence the null hypothesis was rejected and the alternate hypothesis was accepted. Accounting information is effective in decision making. Based on the findings, the study recommends that banks should continue to improve the quality of their accounting information and the use of it in decision making. Specifically, bank of Agriculture should ensure that their accounting information is accurate and complete, and that they shoul have robust systems in place to verify and validate the information. In addition, they should train their staff to properly interpret and use accounting information.

Keywords: ***Accounting, Information, Bank, Decision, Agriculture***

1.0 INTRODUCTION
1.1 Background of the study
Accounting information is the type of information generated by an organization to be used as a basis or tool for decision making. Availability of information at the right time is crucial to the success of every business organization, and failure to leverage on accounting information often prove counter-productive towards the achievement of goals in organizations.

Accounting information have qualitative and quantitative details in readable and understandable form to assist various stakeholder, Ana (2021). This can as well be related to the record generated from organisation's transactions at the finance and account section to be used as a tool or resources upon which decisions of the organisation are taken towards accomplishment of set goals and objectives. This information cut across areas like financial information, such as sales growth, profits, return on capital employed and market shares. Non-financial information, such as customer satisfaction level, production quality, performance of competing products and customer loyalty. Managerial information etc. Akinlade (2022). For an organization to be more effective, reliable and to have a sound decision will depend largely on the validity and reliability of the financial information made available to the decision maker as at the time such decisions are made (Kourdi, 2020).

Accounting is fundamentally a measurement and communication process used to report on the activity of profit and non-profit seeking organizations. In order words, it is concerned with the discipline of summarizing, recording, analysing and interpreting economic events and other financial activities. This process is performed by Accountants who furnish management with the relevant information needed for effective and efficient decision making as to contribute to the quest for means of surmounting industrial, commercial, governmental and academic problems inherent in a dynamic and volatile socio-economic and political setting. The information is primarily financial and generally stated in monetary terms.

Accounting information is prepared and presented in form of financial statement in accordance with the accounting standard issued by the Nigerian Accounting Standard Board Act (2019) which are the means of conveying to management and interested outsiders a concise picture of the profitability and financial position of the bank. Nigeria has adopted International Financial Reporting Standards (IFRS), in place of International Accounting Standard (IAS). These accounting

standards stand as a guide to various organizations to prepare their annual financial statement in accordance with accounting standards. The management plan as to what to produce, when to produce, how to produce and who to distribute decision is based on accounting information.

In 2014, International Public Sector Accounting (IPSA) was adopted and implementation of the accrual basis. IPSAS, serve as the basis for preparing and presenting financial statements of funds. It was initially issued by the International Public Sector Accounting Standards Board of the International Federation of Accountants and meant to serve the public interest by requiring the presentation and disclosure of the financial transactions in a comprehensive and consistent manner, to enhance transparency and accountable management of public resources. Stamford (2022) stated that accounting information has played a role as a tool for management decision making because it functions as a historical record of contractual obligations between outsiders and the end product in form of financial statements to report the financial status of the bank at a point in time.

Accounting must be presented in such a way and manner that, it will be useful in helping users to make their respective decision. It must be characterized with the following: relevant, reliable, timely, understandable and neutrality. To enhance credibility and utility of information the decision-making process, established concepts, principles, standard and legal requirements are strictly followed in order to translate physical facts into money values and ensure that all types of report are integrated and prepared on constituent basis (Ogunmayi, 2021).

According to Kanakriyah (2023), accounting information played an important role in the management of entities and it provides the appropriate information for both internal and external users.

In spite of its relative importance in the Nigerian economy, agriculture does not receive as much attention from accounting researchers, practitioners and standard setters. For example, until the arrival of IAS 41 in 2001, there was no standard anywhere for biological assets, whose valuation is difficult and controversial. In terms of causality, the generally lower level of managerial sophistication, lack of economic means in the sector and the limited appropriateness of general accounting principles have led to inefficient agro-informative panel. Farmers have been more reluctant to prepare accounting reports. Moreover because of their size in legal form, most Nigerian farms have no legal form. Olsson and Allen (2023) made clear that limited use of accounting in agriculture on account of shortcoming accounting skills by workers, regarding the predominance of the small farms they possess.

According to Aleisa & Tijani (2020), accounting information is characterized by high quality that determines the effectiveness and efficiency of the entity in making appropriate decisions.

1.2 Aims and Objectives of the study

This study examines how Accounting information and decision making can help in the banking organization;

To determine the relationship between the neglect of accounting information and decision making in bank of Agriculture.

The following hypothesis stated in the null form may be raised for testing.

$H0_1$: There is no relationship between the neglect of accounting information and decision making in bank of Agriculture.

2.0 LITERATURE REVIEW

This part reviews the theoretical framework of accounting information and decision making in bank of agriculture, and review of existing empirical literature.

2.1 Theoretical Framework

This study is anchored on Agency theory which examines the relationship between principals (stakeholders) and agents (management). In banking, it addresses how management uses accounting information to act in the best interest of the stakeholders. According to Baker & Gibbons (2021) effective accounting practices reduce information asymmetry, leading to better decision-making and alignment of interests between managers and stakeholders. Recent studies explore variations in agency theory, such as how digital transformation impacts agency relationships in organizations.

Barney & Arikan (2021) posits that organizations gain competitive advantage through valuable, rare, inimitable resources. In the bank of agriculture, accounting information is viewed as a critical resource that informs strategic decisions, asset management, and financial planning. Hastie &

Dawes (2021) in their decision theory focuses on the rationale behind decisions made under uncertainty.

The bank utilizes accounting data to evaluate risks and benefits of lending, investment, and operational strategies, facilitating informed decisions. Advances in behavioural decision theory highlight how cognitive biases influence financial decision-making in banking, integrating insights from psychology and economics. Information asymmetry occurs when one party has more or better information than the other. The bank can reduce information asymmetry with transparent financial reporting, improving trust and decision-making among stakeholders and clients

2.2 Empirical Review

Empirical studies have investigated the issue of accounting information and decision making in bank of agriculture.

Bakmaz, dragana, Slobodan & Dragosavac (2024) focused on the significance of real financial reporting of Agriculture mechanism in relation to the making of management decisions of individual farms and medium-sized agricultural enterprises. The study indicates that the existence of significant differences in terms of the use of Agriculture machinery in relation to the analysed factors, in relation to its age value, fuel consumption and its maintenance both in individual farms and in the operations of medium-sized agriculture enterprises. In addition, the study shows that medium-sized agriculture enterprises use younger, more expensive agriculture machinery, and that owner satisfaction is somewhat lower with lower fuel consumption and lower maintenance costs of agriculture machinery. The result show that the value of Agriculture mechanization can be predicted in both aspects of the organization's agriculture production.

Alabi (2023) in his study "Empirical Analysis of Financial Reporting and its effect on Agricultural Development financing" investigates the effects of financial reporting practices on the effectiveness of financing agricultural development projects. The study reveal that financial reporting has a significant impact on the investment decisions in bank of agriculture.

Barrack & David (2023) in their study 'the impact of financial reporting on the financial performance of Agricultural firms' investigates how efficient and timely financial reporting disclosures significantly influence the financial performance in bank of agriculture.

Obi-Anike, Daniel, Onodugo, Attamah & Imhanrenialena (2023) carried out a study on 'The role of financial information literacy in strategic decision-making effectiveness and sustainable performance among agribusiness entrepreneurs in Nigeria. the outcome indicates that financial information literacy significantly impacts agribusiness performance sustainability among entrepreneurs. It concluded that financial information literacy is needed for strategic decision-making effectiveness and performance sustainability among agribusiness entrepreneurs, particularly in rural areas.

Kenkel (2021) in his study 'Financial Statement Analysis for Agriculture Cooperatives' posits that the financial condition of a cooperative reflects both current decisions and long-term trends and strategies. By closely analysing the financial statements, you will be able to assess the financial position and performance of the cooperative firm and note any favourable or unfavourable trends.

Nnadi (2021) examined "The impact of financial information on strategic decision-making in agricultural banks." The study focuses on how agricultural banks utilize financial information to inform strategic planning and operations. The study shows that reliable and timely financial information improve efficiency of strategic decision making in Agricultural banks.

3.0 METHOD DATA COLLECTION

In this study, data was collected via questionnaire and personal interviews which were analyzed using simple table with the percentage magnitude or perception of people who subscribed to a particular opinion. The method was adopted or used because its relative simplicity and capacity to accommodate large data. Inferential statistics via chi-square (X2) was used to test the hypothesis formulated. Taro-yamane formula was

used to determine the sample size of 55 from a total population of 65 comprising of senior and junior staff.

4.0 RESULS AND DISCUSION

4.1 Data Presentation

Result on the responses on the questionnaire there is a relation between the neglect of Accounting Information and decision making in Bank of Agriculture is presented in Table 4.1. It shows that 53 respondents representing 96% said yes, 2 respondents representing 4% said while non-said undecided as an answer to the questionnaire.

Table 4.1: There is a relationship between the neglect of Accounting Information and decision-making in Bank of Agriculture

OPTION	RESPONDENTS	COMPUTATION	PERCENTAGE
Yes	53	$\frac{53 \times 100}{55}$ 1	96
No	2	$\frac{2 \times 10}{55}$ 100	4
Undecided	0	$\frac{0 \times 100}{55}$	0
Total	**55**		**100**

Source: *Field Survey 2024*

The result of the responses on questionnaire that there is no relationship between Accounting Information and decision making in Bank of Agriculture is presented in Table 4.2. It shows that 40 respondents representing 73% said yes. 10 representing 18% said no while 5 representing 9% were undecided as it relates to this question.

Table 4.2: There is no relationship between Accounting Information and decision-making in Bank of Agriculture.

OPTION	RESPONDENTS	COMPUTATION	PERCENTAGE
Yes	40	$\frac{40 \times 100}{55}$	73
No	10	$\frac{10 \times 100}{55}$ 1	18
Undecided	5	$\frac{5 \times 100}{55}$ 1	9
Total	**55**		**100**

Source: *field survey 2024*

Test of Hypothesis

Ho: There is no relationship between the neglect of Accounting information and Decision-making in the Bank of Agriculture

H_1: There is a relationship between the neglect of Accounting Information and Decision-making in the Bank of Agriculture.

The computation of the test of the research hypothesis is presented in Table 4.3. It shows the Chi square calculated is 98.6.

Table 4.3: Result computation on test of the research hypothesis

OPTION	**Oi**	**Ei**	**01 – Ei**	**(01 – E1)2**	**(01 – ei)2 / E1**
Yes	53	18.3	34.7	1204.1	65.8
No	2	16.3	-12.3	265.69	14.5
Undecided	0	-18.3	-18.3	344.89	18.3
Total	**55**				**98.6**

Source: *Field survey 2024*

E1 – expected frequency

$$E1 = \frac{\text{Sum of respondents}}{\text{No of categories}}$$

$$= \frac{55}{3}$$

X2 = 82.1

DEGREE OF FREEDOM = n – 1

Where n is the number of category

DF =3-1 = 2

Level of Significance = 0.05

Critical Value i.e X2 Tabulated = 5.991

Decision Rule

Since x2 tabulated (5.991) is less than x2 calculated (98.6), we reject the null hypothesis and accept the alternative which states that there is a relationship between the neglect of Accounting Information and Decision-making in Bank of Agriculture.

4.2 Discussion

There is relationship between the neglect of accounting information and decision making in bank of Agriculture. It is very clear that accounting information are useful in bank of agriculture and are important tools for their survival. Results shows that a positive relationship exists between the neglect of accounting information and decision making in bank of agriculture. This shows that if accounting information are neglected It may lead to poor, ineffective decision making in the bank of agriculture

The research revealed that the bank of agriculture also applies accounting information in making useful and effective decision. The effectiveness however, was supported by facts gotten from accountants on how its application has affected the bank, which they claimed has affected the bank positively. This is to say that the use of accounting information are very vital in decision-making of the organization and it leads to an effective and efficient use of decision-making in the organization and also the management makes use of accounting information in their day to day management decision making.

5.0 CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Drawing from the findings of the study, it is concluded that accounting information is a cornerstone of effective decision-making within the bank of agriculture. It supports financial management, risk assessment, regulatory compliance and strategic planning, ultimately contributing to the bank's mission of fostering agricultural development and supporting farmers. By leveraging accurate and timely accounting data, the bank can enhance its operations and better serve the agricultural community.

Managers should have elementary knowledge of accounting generally to enable them understand the information for quick use. They should be trained from time to time on how to apply accounting information for decision making

Apart from employing qualified accountant to handle the processing of management accounting information, management should from time to time conduct an in-service training for accountant to enhance their proficiency in the supply of accurate information for management use.

Management should ensure that jobs are properly allocated to staff that are qualified for them so as to ensure quality and timely jobs especially in the sectional areas as their report form part of the main report that is being sent to the management. If the report from various sections is delayed, it will also affect the timely presentation to the management for immediate decision making.

5.2 Recommendations

Based on the findings, the study recommends that management should provide all the necessary facilities that the sections will need to facilitate their jobs as quickly as possible

It is also recommended that the management should ensure that there is proper personnel allocation in making sure that people working in accounting sections are purely accountants as this will affect the quality of production.

REFERENCES

Abbasi, A. Ssrker S., and Chiang R. H. (2022). Big Data Research in Information System: Toward an inclusive Research Agenda. Journal of the Association for information systems 17(2).

Addai D. (2020). Employee involvement in decision-making and worker motivation: a study of selected banks in Nigeria.

Adediran, S. A., & Alabi, S. O. (2019). Risk Management Practices in Agricultural Banks: The Role of Accounting Information.

Alabi, A. (2023): "Empirical Analysis of Financial Reporting and its Effects on Agricultural Development Financing.

Allen, R. (2023). Farm Potential: High tech leads the average farmer's know-how. Agricultural Bank 88:26.

Ana Jezovita (2021). Accounting Information in a Business Decision-Making process Zagreb International Review of Economics and Business, 18(1), 61-79.

Baker, H. K., & Ricciardi, V. (2024). 'Investor Behaviour: The Psychology of Financial Planning and Investing' Wiley.

Barrack Ovma & David Nyambane (2023). Impact of financial Reporting on the Financial performance of Agricultural firms.

Baker, G. P., & Gibbons, R. (2021). "The Appropriation of Economic Rents: The Role of Contracts and the Role of Institutions" Journal of Economic Perspectives.

Bakmaz, Dragana, Slobodan & Dragosvac (2024). "The Significance of Real Financial Reporting of Agriculture Mechanism in relation to the making of management decisions of individuals farm and medium-sized Agricultural Enterprises.

Barney, J. B., & Arikan, A. M. (2021). "The Resource-Based view: Origins and Implications" In Handbook of Strategic Management.

Ehrenberg, R. G. & Smith, R. S. (2022). Modern Labour Economics: Theory and Public Policy: Routledge.

Freeman, R. E., & Reed, D. L. (2023). "Stockholders and Stakeholders: A New Perspective on Corporate Governance.

Hastie, R., & Dawes, R. M. (2021). "Rational Choice in an Uncertain World: The Role of Heuristics" Psychology Press.

Kaplan, R. S., & Norton, D. P. (2023) "The Balanced Scorecard: Translating Strategy into Action" Revised edition.

Kenkel (2021). Financial Statement Analysis for Agricultural Cooperations.

Kourdi J. (2020). Business Strategy: A Guide to Effective Decision-Making: The Economist.

Marron, D. B. (2023). "Blockchain and the Future of Financial Reporting". Accounting Horizons.

Nnadi, M (2021) "The Impact of Financial Information on Strategic Decision-Making in Agricultural Banks".

Nwokolo, O. & Ijere, E. (2022). "Challenges in Accounting Practices in Agricultural Financing.

Obi-Anike, Daniel, (2023). The Role of Financial Information Literacy in Strategic Decision-Making in Agricultural Effectiveness and Sustainable Performance among Agricbusiness Entrepreneurs in Nigeria.

Ogunmayi Bamidele (2021). Accounting Information and Strategic Decision in Tertiary Institutions in Nigeria. Journal of Business Education 2(4), 1-9.

Ogunleye, O. J., et al. (2020). The Impact of Accounting Information on Financial Performance in Nigerian Banks.

Okeke, C. E., et al. (2021). Strategic Planning in Agricultural Banks: Integrating Accounting Information.

Olsson, R. (2023). Management for Success in Modern Agriculture. Eur.Rev. Agric-Economics. 15: 239-259

Peppard, J & Ward J. (2022). The Strategic Management of Information Systems: Building a Digital Strategy: John Wiley & Sons.

Raed Kankriya (2023). The Impact of Accounting Information Systems on the Bank success: Evidence from Jordan. Research Journal of Finance and Accounting, 8(17), 1-14.

HYBRIDITY AND FEMINISM IN MODERN AFRICAN POETRY

[1]Patience Ayebaemi Zuokemefa and [2]Deinmotei Erefaghe Igbe
[1]Bayelsa State Polytechnic, Aleibiri
Email: emipatz@yahoo.com
Phone No.: +2348036719551
&
[2]Bayelsa State Polytechnic, Aleibiri
Email: deinmoigbe@gmail.com
Phone No.: +2348063330393

Abstract
This paper examines the concepts of hybridity and feminism in modern African poetry and shows how they influence the socio-cultural development of post-independence African societies. The study reveals that modern African poetry reflects African experiences and concerns. It is a poetry of and from the Africa continent. The methodology for this research is textual analysis of selected modern African poetry collections. The study uses post-colonial literary theory as its theoretical framework to examine the effects of colonialism and neo-colonialism in contemporary African experience. Also, this paper uses post-colonial literary theory to examine the limitations of critical literature on the subject of modern African poetry in post-independence African societies. The study identifies two features of post-colonial theory that describe modern African poetry. They are hybridity and feminism. The study reveals that hybridity allows the assimilation of a foreign language and an African indigenous language side by side in the rendition of modern African poetry in post-independence African societies. Also, the paper examines the concept of feminism in modern African poetry as a means of reinstating the downtrodden images of women in post-independence African societies. Therefore, by examining these post-colonial concepts in modern African poetry, this paper helps to explain the problematic nature of the post-colonial literary theory. Also, the study occupies a vital place in African literature and postcolonial writings.

Keywords: hybridity, feminism, post-independence Africa, modern African poetry

1.0 INTRODUCTION

1.1 Background of the Study

Modern African poetry is a poetic rendition reflecting African leitmotifs and concerns. It deals with the "social and political concerns found in the African consciousness" (Zuokemefa & Igbe, 2023, p. 1). This poetry is branded by opinions that preserve the ideas of indigenous African values. Therefore, the scope of this poetry covers a wide collection of experiences set in the framework of heterogonous societies which themselves embody many different cultural assortments within the African continent. These experiences revolve around the continent's vast cultural heritage that was besmirched by slavery, colonialism and neo-colonialism. Also, these concerns are unique because they echo the impact of European colonization on post-independence African socio-cultural experience.

Also, modern African poetry embraces African history and reality (Soyinka, 1999). For example, some aspects of the modern African poetry reveal the "scrambles for self-assertion, others struggle for identity. Some in the long run examines the powerlessness of man in the face of uncontrollable phenomenon" (Ogunyemi & Kolawole, 2015, p. 2). However, this research examines modern African poetry from the stances of mutual understanding between racial relationships in post-independence African settings.

Accordingly, creating the presence of hybridity in African literature. Also, this research observes the presence of subjective consciousness between human beings which affects gender relationships in the rendition of poetry. Therefore, this paper examines the concepts of hybridity and feminism as features of post-colonial theory in modern African poetry. The main concern is to show how the presence of hybridity and feminism in modern African poetry influences the socio-cultural development of post-independence African societies.

1.2 Statement of the Problem

Researchers on modern African poetry always pay attention to other problems. Also, a large number of those who study modern African poetry have not examine the concepts of hybridity and feminism as features of post-colonial theory in modern African poetry. Therefore, this study examines these problems in line with post-colonial literary theory.

1.3 Aim and Objectives

The aim of this research is to show how hybridity and feminism in modern African poetry influences the socio-cultural development of post-independence African societies. To fulfil the aim of this study the objectives are to:

a) examine the concepts of hybridity and feminism as features of post-colonial theory in modern African poetry;
b) show the limits of critical literature on the modern African poetry which has largely undervalued the presence of hybridity and feminism in poetic rendition.

1.4 Research Questions

This research seeks to address the following questions:

a) How does modern African poetry capture the concepts of hybridity and feminism in its rendition?
b) How does hybridity and feminism in modern African poetry affect the socio-cultural development of post-independence African societies?

1.5 Significance of the Study

The examination of hybridity and feminism as features of modern African poetry in this paper helps to clarify the problematic nature of modern African poetry in post-independence African societies. Also, one can say that the study of these post-colonial concepts in modern African poetry is a significant success in African literature. This is because our examination of hybridity and feminism in modern African poetry adds to the growth of African literature. Therefore, this study lodges a dominant position in the examination of modern African poetry and post-colonial literary theory.

2.0 LITERATURE REVIEW

2.1 Theoretical Framework: Postcolonial Literary Theory

Post-colonial literary theory is the theoretical framework used in this study. The theory is "an umbrella term that covers different critical approaches which deconstruct European thought in areas as wide-ranging as philosophy, history, literary studies, anthropology, sociology, and political science" (Mongia, 2020, p. 20). It studies the use of power by colonising nations over the colonised people's values and their definition of the Self during colonialism in literature (Wa Thiong'o', 1981, p. 12). This is because imperialism reveals the relations of domination and submission which turn the indigenous people into instruments of production for the colonising nations (Cesaire, 1994, p. 177).

Furthermore, post-colonial literary theory deals with literature written in colonised countries by their citizens who try to articulate their identity and praise their distinctiveness (Igbe, 2015, p. 77). Also, the theory "is set to reclaim the lost glory of Africa's past" (Igbe et al 2019, p. 234), because Africa's liberation struggle has brought some degree of independence to African hands. However, "the winning of that autonomy left still unaccomplished our total liberation from western political, economic, and cultural hegemony. It still leaves unattempted the construction of a revitalised African society" (Chinweizu et al; 1975, p. 33). For instance, literary works done for Africans by Africans constitute the historic and societal experiences in Africa. Similarly, most modern African poets write out of an African experience with a responsibility to project the African destiny (Achebe, 1975, p. 7). Thus, modern African poetry is presented in a way that it shows the various concepts of post-colonial literary theory. However, the aim of this paper is to examine the concepts of hybridity and feminism as features of post-colonial theory in modern African poetry. The main concern is to show how hybridity and feminism in modern African poetry affects the socio-cultural development of post-independence African societies.

2.2 Conceptual Framework

2.2.1 Hybridity

Hybridity is one the post-colonial concepts in modern African poetry. It means the incorporation of cultural practices from the colonising culture. Hybridity is "an intricate combination of attraction and repulsion that describes the relationship between the colonisers and the colonised" (Amamio, 2021, p. 349). It refers to the conception of new trans-cultural systems within an interaction area created by colonisation. Some forms of hybridisation are language, governmental systems and cultural relations (Ashcroft et al., 2013, p. 26). Hybridity emerges in post-colonial African societies as a careful association of cultural suppression, as when the stranger acquires political and economic power, or when immigrants influence native people and force them to accept new, foreign societal forms.

2.2.3 Feminism

Feminism reveals sexual disparity and women's issues relating to the post-colonial African experience, especially, gender, class and ethnic subjugation in modern African poetry. The impression of feminism exposes the relationship between textuality and sexuality, gender and genre in African literature. Feminism examines the concept of socialisation and the representation of femininity in culture and literature (Barry, 2017, p. 68). Also, the concept of feminism in modern African poetry examines women status and conditions, their roles, and what they have passed through in other to change from submissive followers to leaders (Jasim et al; 2019, p.10102).

2.3 Empirical Framework

Ogunyemi and Kolawole (2015) examined modern African poetry from an interdisciplinary approach. They used the library source and the science of information to re-appraise and explain the work of poetry. Their work concentrated on the various voices in modern African poetry. The work focuses on the textual examination of several poems across Africa. Also, Ogunyemi & Kolawole (2015) examined key themes as the voices of people which most modern African poets attempt to typify poetically. For these literary critics, the "introduction of unique language gives the poems a different projection from the English poets of the Victorian era, Elizabethan era or different from the romantic era in English literature" (Ogunyemi & Kolawole, 2015, p. 11). They stated that modern African poets use different imaginings from African experiences which set them out from European poets. Again, they argued that new metaphors were formed to illuminate the African voices based on the poets' encounter with the different cultural experiences in Africa (Ogunyemi & Kolawole, 2015). However, Ogunyemi and Kolawole limited their analysis of modern African poetry to a sociological approach to literary criticism because the poems they analysis were realistically articulating African worldviews and eccentric standards.

Okoye (2019) studied modern African poetry from a cross-cultural perspective. For Okoye, modern African poetry contained different degrees of applications, contents and organizational indications of dependences on African oral traditions. This is because the poetry borrows largely from the old-style African indigenous and oral traditions (Okoye, 2019). Also, Okoye claimed that modern African poets have naturally combined African indigenous forms and foreign literary styles in their presentations of poetry. He concluded that modern African poetry is a mixture of old wine of African oral traditions and post-modern transcultural issues. Thus, the aim of the study was to "prove that transculturalism has been present in texts from Africa, especially poems" (Okoye, 2019, p. 106).

Onyejizu and Obi (2020, p. 332) claimed that "ideological commitment to cultural norms is a standpoint that has led to the development of modern African poetry". This is because the modern African poet is seen as a promoter for cultural change and as such logically uses African traditional forms in his poem to effect change (Onyejizu & Obi, 2020). Also, they revealed that the modern African poet is committed to the psychological, political, social demands of his people and their social setting. Therefore, with this commitment to protect the right ideals in African societies, modern African poetry is seen as the representation of many silent voices in the continent (Onyejizu & Obi, 2020). For Onyejizu and Obi, the poet speaks boldly against various depravities inherent in

the society via the rendition of modern African poetry. Furthermore, their study examined the influence of the traditional Yoruba culture on modern African poetry with a focus on the content and forms of satire, orature, humor, proverbs, parables, riddles, and traditional forms of language.

Nelson and Yakubu (2022) examined the aesthetics of modern African poetry. For Nelson and Yakubu, modern African poets have artistically selected their individual ideologies of writing for the oppressed and the less privileged people in most African societies through the use of refrain or repetition. These literary critics examined the use of repetition in some selected modern African poems as an effective tool used by modern African poets to put across their themes and to attain aesthetic values in their works (Nelson & Yakubu, 2022). According to Nelson and Yakubu (2022, p. 576), "modern African poets constantly convey their message with aesthetics in mind. It is this aesthetics that, like flies to rotten meat, attract their readers and audience to their messages". Therefore, Nelson and Yakubu limited their analysis of modern African poetry to the use of aesthetics by paying attention to the use of refrain or repetition.

3.0 METHODOLOGY

The methodology for this research is textual analysis of selected modern African poetry collections. Being a literary study, this paper is largely library-based. Also, it relies on critical sources as books, articles and reviews on hybridity and feminism. It is the hope that these resources will in turn lead to an in-depth understanding of hybridity and feminism in modern African poetry.

4.0 RESULT AND DISCUSSION

4.1 Result

Features of Post-Colonial Theory in Modern African Poetry

This segment examines the concepts of hybridity and feminism as features of post-colonial theory in modern African poetry. The main concern is to show how hybridity and feminism in modern African poetry influences the socio-cultural development of post-independence African societies.

4.1.1 Hybridity in Modern African Poetry

The intention of colonial discourse was to see the colonised populations as degenerated types on the basis of race, in order to rationalize Western colonialisation, administration and institutions (Bhabha, 1993). However, the concept of hybridity allows the association of socio-cultural practices within the contact point of colonialism. This contact point creates mutual understanding between the coloniser and the colonised. This is because "the look that the native [colonised] turns on the settler [coloniser] is a look of lust […] The colonised man is an envious man" (Fanon, 2019, p. 30). Also, the colonised man wants "to be part of the dancing, laughing, or /Groaning not [to] be singled out as out of order" (Ojaide, 2018, p. 32). Therefore, the colonized man (the poet persona) decides: "I choose not to steal from the lord [the colonizer] of the poor / Who had made me his slave without qualms. / If I steal from my thief; I will be his thief; / If I murder the murderer, his blood taints me" (Ojaide, 2018, p. 116). Similarly, Ohaeto (1996, p. 44) reveals how the African native longs for a cultural connection between the West and Africa:

The flute calls in the distance:
Call out the masquerade
Call the fearless spirit;

The drum calls in the distance:
Call the ancient spirit
Call the past, the present
Call the future,

Here, the poet persona is summoning 'the masquerade' to accept the call from 'the future'. The 'future' represents foreign cultures from the West. The masquerade is an African communal spirit that defends the interest of a family or a community. It represents African cultural practices from 'the past' and in 'the present'. According to Akubor (2016, p.33), in most "African societies masquerades are associated with ancestors, good will and governance. They defended and safeguarded society and accordingly prevented all potent threats to their existence and that of related institutions". Also, "masquerade ceremonies across Africa, contribute to preserving cultural cohesiveness and folklore" (Micah, Donkor & Owusu-Ansah, 2022, p. 1).

With the introduction of Western culture in Africa: "Masquerades depart from antholes"

(Ohaeto, 1996, p. 97). Here, "antholes" represents African socio-cultural norms that had covered and protected the "Masquerades" from external influences for centuries. However, with the amalgamation of cultural practices from the West, the "Fading Chant' then completes the cycle" (Ohaeto, 1996, p. 97), because of the careful association of cultural suppression. Consequently, "there is nothing in the concept of hybridity that advocates equal cultural exchange with the imperial world … The imperial discussion becomes hybrid when the communication of the indigenous people transects with that of the westerner" (Igbe, 2015, p. 309). Similarly, Bhabha (1993) improves on the concept of hybridity by stressing on resistance to the Western imperial powers through literature. According to him, hybridity "is a problematic of colonial representation and individuation that reverses the effects of the colonialist disavowal, so that other 'denied' knowledges enter upon the dominant discourse and estrange the basis of its authority- its rules of recognition" (Bhabha, 1993, p. 114).

Similarly, the imperial discussion becomes hybrid in modern African poetry when the communication of the indigenous poet persona transects with that of the Westerner in poetic rendition. Thus, the structures of culture and representation conflict through the various meanings given to the same word. This leads to a literature of resistance, and the presentation of subversive texts in social and cultural issues as a way of doing justice to literature from the Third World (Amina & Ilhem, 2019, p. 698). This is because there is an assimilation of a foreign language and African indigenous languages in the rendition of most modern African poems in post-colonial societies. For example, Egejuru (1995) synchronises English language and her Igbo language without an endnotes or explanation on the latter in her presentation of an elegy. The lines below illustrate this point:

> And how your outline
> Hangs in my mind,
> Like mirage on a hot tarmac road,
> Tempting my pen and brush.
> Can I dare verbalize or paint you,
> ULUJI – that which nature
> Made perfect?
> Where
> should I begin,
> Head or
> toe?
> ULUJI, your beauty
> Was wrapped
> In a tall phrase –
> *ULIJI nwanji mara nma OKPU!*
> (Egejuru, 1995, p. 95).

Towards the end of the poem above, the poet uses English language and Igbo language side-by-side without giving room for explanation in English language. Similarly, Opoku-Agyemang (1995) uses powerful imageries to reflect the traumas of neo-colonialism in his Ghanaian society, which is similar to the Nigerian setting. However, his side-by-side use of the English language and his Ghanaian language evokes hope for his indigenous readers. Like Egejuru, Opoku-Agyemang rejects the use of endnotes to explain his choice of diction. Thus, the persona cries:

> Okto, Preko, Akyin and Tanoba called Atakora
> The seed is hard; heaven has receded
> Our God and his majesty move up against the pestle.
> Today's elders dance the Apirede, but like children
> Do not know when to stop;
> Obra! Obra! Abusua and Ntoro gather, gather
> It's about us, it's about our home
> And it is about time! (Opoku-Agyemang, 1995, p. 151).

4.1.2 Feminism in Modern African Poetry

Feminism in modern African poetry studies the question of whether women and men are fundamentally distinct on account of biology or are socially conceptualised as different. As Spivak (1997, p. 147) puts it, "the female individualist... articulates herself in shifting relationship to what is at stake" because, "the 'native female' as such (within discourse, as a signifier) is excluded from any share in the "norm". Similarly, Cixcus (1991, p. 226) argues that feminism in literature confirms "women in a place other than that which is reserved in and by the symbolic, that is, in a place other than silence". This is because feminism in literature helps women to "break out of the snare of silence" in the

society. Therefore, feminism in modern African poetry studies the question of whether women and men are fundamentally distinct on account of biology or are socially conceptualised as different.

Similarly, Raina (2017, p. 3372) argues that "the underline premise of feminism is to seek women's equality and justice in every sphere of life and create opportunities for women to have the same access to the resources that are otherwise freely available to men". The idea of feminism in modern African poetry tries to restore the downtrodden position of women in post-colonial African societies. Also, the study of feminism has strong parallels with modern African poetry in contemporary Nigerian society, because both concepts provide opportunities for women to discuss a variety of experiences they suffered during colonialism and after, especially, subjugation, resistance, gender difference, and representation which were influenced by the imperial centre. Furthermore, the concept of feminism challenges the portrayals of women in non-Western societies as inactive and silent victims and the portrayal of Western women as modern and educated. Thus, Egejuru (1995, p. 96) writes:

> The riddle of my genesis is in Genesis.
> I, woman, have solution to the enigma
> Of my essence and my being.
> I, woman, conceived in the rib cage of dep sleep
> And delivered of my father by
> The first Midwife, God Himself.
> I, woman, helpmate to my parent,
> Play triple roles of wife, mother, daughter.
> Over the years I have evolved and
> So has the riddle of my genesis.

Here, the persona is a woman. The tone is that of pride and satisfaction for being an African woman. She takes pride in having 'solution to the enigma' of the world, because of her 'triple roles of wife, mother, daughter'. Therefore, Egejuru is celebrating the unique qualities of the African woman from creation. Also, the poet sees the woman as the 'helpmate' to her 'parent'. Likewise, Ojiade (1995, p. 33) eulogies the eternal beauty of an African princess when he says: "The moon will be told of her beauty/Under which we hide and seek our fill". Her splendour reveals the beautiful relationship between human beings and nature before the advent of European colonialism and neo-colonialism in Nigeria. Furthermore, the persona homages her:

> Your name is like your body
> It evokes persistent freshness
> I mutter the magic sound
> For a vision of your fill phrase
>
> The moon will be told of her beauty
> Under which we hide and seek our fill. (Ojiade, 1995, p. 34).

Also, most modern African poets use the African woman as a representation of a post-independence African physical environment. In most Nigerian settings, the earth is addressed as a woman because of her ability to produce and procreate. However, some modern African poets bemoan the negative treatment minted on the earth by the agents of neo-colonialism. For example, Ogbowei (2001, p. 9) writes:

> with you
> palm sunday
> naked I rid
> an ass
> to take nekede
> with love
> i born.

In the lines above, the poet employs contrast as a tool to covey his message. For example, "palm sunday" signifies the Biblical allusion of the triumphant entry of Jesus Christ and his disciples into Jerusalem. However, the confession of the poet persona ("naked I rid") reveals a sorrowful entrance. Also, the poet discloses that this entry is in a post-independence African setting. Thus, the persona says:

> not in bethlehem of judea
> but in wave wasted brass
> capital of a crucified people
> who with bishop remero will
> rise again
> in oil spent villages
> where the tears of the civilized
> reach god. (Ogbowei, 2001, p. 9).

Here, the entry is "not in bethlehem of Judea" but in the "wave wasted brass" which is a poetic re-presentation of the oil rich Brass Island in the Niger Delta region of Nigeria. Ironically, the setting is the "capital of a crucified people" (blessed with natural resources but marginalized). This is because of the neo-colonial activities in the region. However, the poet persona rekindles the hope of the "crucified people" by associating their plights to that of "bishop remero" (Archbishop Oscar Romero). Archbishop Oscar Romero was the Primate of the Catholic Church in El Salvador. Romero spoke against violence and injustice in El Salvador in the 1970s and was assassinated in 1980 (Brockett, 2005). On 14 October 2018, Pope Francis canonized Romero.

4.2 Discussion of Findings

This paper has found that hybridity permits the integration of a foreign language and an African indigenous language in the rendition of modern African poetry in post-colonial societies. This integration of cultural practices between the West and Africa in poetry can be seen as dynamic as well as contradicting because no one is pure in idea, quality or essence. Also, the paper has revealed that the concept of hybridity in modern African poetry is as a result of the impact of European colonialism in Africa.

Consequently, the poetic rendition creates a conflict of meaning in the representation of African cultural practices through the numerous connotations and denotations given to a word in poetry. This leads to a poetry of resistance, and the presentation of insurrectionary writings in socio-cultural matters as a way of presenting fairness to poetry from non-western nations (Amina & Ilhem, 2019, p. 698). Nevertheless, the side-by-side use of the English language and the African language conjures hope for the African readers because the modern African poet deliberately rejects the use of endnotes to explain and simplify his choice of words. Thus, giving credence to local content in poetic rendition. Therefore, this paper has helped in enriching scholarship on post-colonial literary theory and African literature, by showing how modern African poetry in post-independence societies provide avenues for cross-cultural issues which are dynamic in nature.

This paper has also demonstrated and shown that the idea of feminism in modern African poetry is a way of restoring the browbeaten images of the African women in post-independence African societies. The paper has shown that the idea of feminism in modern African poetry challenges the representations of women in post-colonial societies as sedentary and voiceless sufferers and the depiction of Western women as modern and educated. Thus, the modern African poet presents poetry to celebrate the unique abilities of the African woman from creation. Also, this research has found that most modern African poets use the African woman as an image of the African physical environment because of her ability to produce and procreate. Therefore, modern African poetry informs and help the African woman in her struggle against some African cultural patterns set out to subdue her as an individual.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

This paper has been concerned with the study of hybridity and feminism as features of modern African poetry in post-colonial African society. The study has shown that the concept of hybridity allows the assimilation of a foreign language and an African indigenous language in the delivery of poetry in post-colonial African experience. Also, the paper revealed that the presentation of feminism in modern African poetry is a way of restoring the subjugated images of women in post-colonial African society. The study uses post-colonial literary theory as its theoretical framework to observe the effects of colonialism in modern African poetry. Also, this paper used the post-colonial literary theory to examine the limits of critical literature on the subject of modern African poetry.

5.2 Recommendations

Based on our findings and conclusion, the following recommendations are made:

i. Scholars of modern African poetry should be exposed to post-colonial concepts in literature. With such experience, the scholars will be in a good situation to comprehend modern African poetry and its

effects on contemporary African societies. For materials dealing efficiently with post-colonial literary theory, the scholar's preliminary texts may be Padmini Mongia's *Contemporary Postcolonial Theory: A Reader*; Bart Moore-Gilbert's *Postcolonial Theory: Context, Practices, Politics*; Homi Bhabha's *The Location of Culture*; Edward Said's *Orientalism*; *Culture and Imperialism*; Bill Ashcroft, Gareth Griffiths, and Helen Tiffin's *The Empire Writes Back: Theory and Practice in Post-Colonial Literature*; *Post-Colonial Studies: The Key Concepts*; Achille Mbembe's *On the Postcolony*, etcetera.

ii. Modern African poets should try to direct their imaginative efforts towards representation of post-colonial concepts in their poems.

REFERENCES

Achebe, C. (1975). *Morning Yet on Creation Day*. Heinemann.

Akubor, E. O. (2016). Africans Concept of Masquerades and their Role in Societal Control and Stability: Some Notes on the Esan People of Southern Nigeria. *Asian and African Studies*. 25(1), 32 – 50.

Amamio, R. P. (2021). Hybridity and the New African Woman. *Journal of Language and Literature*. 21(2), 349 – 361.

Amina, S. and Ilhem, S. (2019). Hybridity, Ambivalence and Mimicry in Postcolonial Algerian Novel. *Global Scientific Journals*. 7(4), 697 – 708.

Ashcroft, B., Griffiths, G. & Tiffin, H. (2013). *Post-Colonial Studies: The Key Concepts.* 3rd Edition. Routledge.

Barry, P. (2017). *Beginning Theory: An Introduction.* 4th Edition. Manchester University Press.

Bhabha, H. (1993). Of Mimicry and Man: The Ambivalence of Colonial Discourse. *The Location of Culture.* Routledge.

Brockett, C. D. (2005). *Political Movements and Violence in Central America*. Cambridge University Press.

Cesaire, A. (1994). From Discourse on Colonialism. Eds. P. Williams & L. Chrisman. *Colonial Discourse and Post-colonial Theory: A Reader*. Columbia University Press, 172-180.

Chinweizu, I., Jemie, I. & Madubuike, I. (1980). *Toward the Decolonization of African Literature*. Fourth Dimension Publishers.

Cixcus, H. (1991). The Laugh of the Medusa. Ed. S, Gunew. *A Reader in Feminist Knowledge*. Routledge, 224 – 230.

Egejuru, P. A. (1995). Uluji. Ed. T. Sallah. *New Poets of West Africa.* Malthouse Press, 94-95.

--- . (1995). I, Woman. Ed. T. Sallah. *New Poets of West Africa.* Malthouse Press, 96.

Fanon, F. (2019). *Black Skin, White Masks*. Trans. Reprint Edition. Grove/Atlantic.

Igbe, D. E. (2015) The Effects of Post-Colonial Literary Theory in Buchi Emecheta's *Second-Class Citizen*. *African Social and Educational Journal*. *Nigerian Edition.* 4(1), 75-83.

Igbe, I., Zuokemfa A. P. & Abarowei, F. E. (2019). The Dearth of Political Leadership in Sefi Atta's Everything Good Will Come. *IAUE Social and Educational Journal*. 6(1), 232 – 241.

Jasim, Z. H., Hamzah, A. H. & Abdulameer, M. H. (2019). Feminism: A Tool to Analyze Literature. *Transylvanian Review*. Xxvii (42), 10102 – 10108.

Micah, V. K. B., Donkor, E. K., & Owusu-Ansah, A. (2022). Traditional Beliefs and Practices in Masquerading: Effutu Context. *International Journal of Culture and Art Studies (IJCAS)*. 6(1), 1 – 2.

Mongia, P. (2020). *Contemporary Postcolonial Theory: A Reader.* Arnold.

Nelson, O. & Yakubu, A. (2022). Aesthetics of Modern African Poetry: A Study of Niyi Osundare and Oswald Mtshali. *International* Journal *of Research and Innovation in Social Science (IJRISS)*. VI(IV), 571 – 577.

Ogbowei, G. E. (2001). rosy. *Let the honey run and other poems*. Minson Publishers, 9 – 10.

Ogunyemi. C. B. & Kolawole, J. A. (2015). Salient Themes in African Poetry: A Re-Appraisal of Library and Information Utilization Process for New Media. *Journal of Philosophy, Culture and Religion*. 3, 1 – 11.

Ojaide, T. (1995). Love Song. Ed. T. Sallah. *New Poets of West Africa.* Malthouse Press, 33-34.

- - -. (1995). Love Song. Ed. T. Sallah. *New Poets of West Africa.* Malthouse Press, 33-34. Print.

- - -. (1995). The Fate of the Vultures. Ed. T, Sallah. *New Poets of West Africa.* Malthouse Press, 34-35.

- - -. (2018). Social being. *The Questioner*: *New Poems*. Kraftgriots. 32 – 33.

- - -. (2018). I Choose. *The Questioner: New Poems*. Kraftgriots. 116.

Ohaeto, E. (1996). *The Voice of the Night Masquerade*. Kraft Books.

Okoye, C. (2019). Old Wine in New Bottles: Rediscovering Tranculturalism in African Poetry. *IGWEBUIKE: An African Journal of Arts and Humanities*. 5(4), 106 – 114.

Onyejizu, R. C. & Obi, F. U. (2020). Ideological Commitment in Modern African Poetry: Redefining Cultural Aesthetics in Selected Poems of Niyi Osundare's *The Eye of the Earth* and *Village Voice*. *Journal of Language and Literature*. 20(2), 332 – 343.

Opoku-Agyemang, Kwadwo. (1995). First Trip to Sunshine. Ed. T, Sallah. *New Poets of West Africa.* Malthouse Press, 151-152.

Raina, J.A. (2017). Feminism: An Overview. *International Journal of Research*. 4(13), 3372 – 3376.

Soyinka, W. (1999) *Poems of Black Africa*. Heinemann. New edition.

Spivak, G. C. (1997). Three Women's Text and a Critique of Imperialism. Eds. R, Selden & S, Smith, *Postcolonial Criticism*. Longman, 145 – 165.

Wa Thiong'o, N. (1981). *Writers in Politics*. Heinemann.

Zuokemefa, P. A & Igbe, D. E. (2023). "The Re-Presentation of Modern African Poetry and its impact on Post-Colonial Nigerian Society". *Multidisciplinary Journal of Academic Research and Development*. 3(2.), 27 – 36.

COMPARATIVE ANALYSIS OF MICROBIAL LIMITING NUTRIENTS IN CORN COB AND HUSK COMPOSTS FOR BIOREMEDIATION OF PETROLEUM HYDROCARBON POLLUTED SOIL

[1]Egbo Walamam Mansi and [2]Eremasi Yaguo Benjamin Ikele
[1]Research and Development Centre, Bayelsa State Polytechnic, Aleibiri
[2]Directorate of Academic planning and Quality Assurance,
Bayelsa State Polytechnic, Aleibiri
egbomansi@yahoo.com

Abstract
The addition of organic compost into polluted soil has been shown to increase soil physical, chemical and biological properties. Utilization of organic compost as soil amendment provides a beneficial approach to managing waste. Rather than discarding organic remains as wastes, it can be converted to resource by composting. The aim of this study is to compost corn cob and the husks, analyze them and compare the limiting nutrient contents in both composts. In conducting the study, Corn cobs and corn husks were composted for about an average period of four months each and then laboratory analysis of the limiting nutrients (N.P.K) Contents in the composts was conducted and compared as possible stimulating agents for bioremediation of petroleum hydrocarbon polluted soil. The result showed that pH of corn cob compost is 8.20 while that of the husk is 6.82. Total carbon was 8.76 in corn cob and 8.93% in the husk compost. Total Nitrogen is 0.84% in cob and 2.86% in the husk. Phosphate is 149.05% in corn cob and 1.845% in the husk compost. Potassium is 325.17 in the corn cob and 370.16% in the corn husk compost. This showed that corn cob is richer in phosphate than the corn husk. However, the corn husk compost is richer in Nitrogen, potassium, and organic carbon than the corn cob compost. The significance of these limiting nutrients in bioremediation process cannot be over stressed reason being that nitrogen and phosphorus play significant role in stimulating microbial metabolic activities. It is concluded that both corn cob and the husk can together be composted and use for soil amendment, apart from composting they can also be used to produce biofuel and bioplastics because their lignin and cellulose contents.

Keywords: Corn cob, husk, compost, bioremediation and petroleum hydrocarbon.

1.0 INTRODUCTION

1.1 Background of the study

Contamination of the environment with hazardous and toxic chemicals is one of the major problems facing the world. The Petroleum industry is one of the greatest environmental polluter as a result of the world massive dependence on petroleum hydrocarbon as such of energy to power cars, domestic and industrial power plants. The petroleum industry is responsible for the generation of high amounts of petroleum hydrocarbons and their derivatives as well as for the pollution of air, soils, rivers, seas and underground water.

Petrochemical compounds undergo transformation either by physicochemical or biological processes. Diverse metabolic capabilities of microorganisms have been employed by humans in a variety of ways to biodegrade petroleum hydrocarbon environmental pollution or waste materials. The application of microorganisms to biodegrade environmental pollutants is scientifically known as bioremediation.

Research on bioremediation using different organic materials as enhancement or stimulating agent to biodegrade petroleum hydrocarbon in polluted media is gaining increasing attention globally. This is because of the public acceptance and the effectiveness of bioremediation as petroleum hydrocarbon remediation technology. According to (Raman., Shalini and Reeta, 2022), bioremediation is a technique to remove environmental contamination in a cost effective and environmentally friendly way. Nwaeke and Okpokwasili (2003) described the potential of microbes to degrade several compounds as a major promising technique to remedy the environmental impact caused by pollutants

Different technologies such as mechanical force, burying, evaporation, dispersant application, and washing have been applied as remediation techniques to

decontaminate polluted environments. However, bioremediation technologies offer greater advantages as a result of its cost effectiveness and environmental friendliness, according to (Jacques et al., 2008; Hesham et al., 2009; Das and Chandra, 2010).

The success of bioremediation as environmental pollution decontamination technology depends on multiple environmental and nutritional factors and some of these factors include: temperature, pH, oxygen, climatological conditions, nutrient availability, presence of alternative carbon sources, physical state of the oil, and the presence of microorganisms with appropriate metabolic.

Availability of soil microbe limiting nutrients such as nitrogen, Phosphate and Potassium together with microbial availability are very key factors for the success of any soil bioremediation process. Bioremediation by biostimulation is the most effective bioremediation technic. Biostimulation involves the addition of soil amendment that helps to stimulate microbial growth and metabolic activities in order to enhance the biodegradation of the pollutant in the soil. Compost from organic matters is a viable supplement to provide the essential microbial nutrient to soil enhance of simulate bioremediation. The aim of this study is to analyze and compare limiting nutrient contents in corn cob and corn husk composts.

2.0 LITERATURE REVIEW

2.1 Conceptual review

Microbial

Microbe is an abridge form of the word microorganism. it refers to an organism which is microscopic in size. This means it can only be seen with aid of a microscope. Microbes or microorganisms may exist as a single celled form or as a colony of cells. The possible existence of microbial life form was first suspected since the sixteenth Century in India. However, the study of microorganisms began when Atonnie Van Leeuwenhoek observed protozoa under microscope in 1674 and then bacteria some years later. Microbes exist in three main domains which include Achaea, bacteria and Eukaryota. The Eukaryotes encompasses fungi, algae, protist and protozoans. Microbes are useful to man in different ways. Microbial simply means relating to microbes or have concern with microbes. Several microbes living in and on human body plays some fundamental roles in the normal functioning of metabolic, physiological and immune system (Nar, 2019). Human body has 10 times more bacteria than the number of human cells in our body (Sender *et al.*, 2016)

Limiting nutrient

Just as humans need food to generate energy for life activities, so do microorganisms require nutrients to thrive in the ecosystem. The nutrient which is presents in the least or minimum amount in an ecosystem is referred to as limiting nutrient. The availability and concentration of these limiting nutrients control the growth and reproduction of microorganisms in an ecosystem. (Elizabeth *et al*., 2022) explained that the rate of pollutant biodegradation in bioremediation system or process is determined by microbial nutrient availability and abiotic factors such as pH, aeration, moisture and temperature. Hence availability of limiting nutrients such Nitrogen, Phosphate and Potassium in bioremediation system is very important for the pollutant removal to be effective.

Bioremediation

Bioremediation is a biological method of removing pollutants from an environmental media such as soil, sediment and ground water. (Elizabeth *et al*., 2022) described bioremediation as a biological method of reclaiming polluted soil. Bioremediation is an economical technique utilizing biological organisms to remove hazardous substances. Bioremediation is increasingly been utilized as polluted site management strategy (Andrew., 2023)

Corn cob

Corn cob is the hard core of an ear of maize. It bears the maize grains or kernels. The cob is made up the chaff, woody ring and pith. It is a byproduct of the maize crop. It is reported to be very fibrous and have several agricultural and industrial applications. Corn cob is used as absorbent for the cleaning of hazardous chemicals and oil spills as well as carrier for fertilizer and insecticides in agriculture (Eden products, 2024)

Corn husk

Corn husk is the leafy outer covering of a maize ear. Corn husk can be biotransformed to

valuable products such as biofuels, bioethanol, Nanocrystals biodegradable film and foams and tissue paper. (Syed et al., 2023)

Compost

Compost is a term used to describe the final material resulting from the microbial decomposition of organic matters. It is the finished product of the microbial mediated recycling of organic materials. It is nutrient rich material that looks like dirt and can be used to improve soil condition and fertility to support plant growth. Compost is a black gold to farmers. (Jeromo et al., 2022) reported that compost amendments have the potential to significantly improve soil structure, porosity and water holding capacity.

Petroleum hydrocarbon

Petroleum hydrocarbons are a large class of organic chemicals made up of carbon and hydrogen. Petroleum hydrocarbons form the major compounds of fossil fuel such as diesel, kerosene, premium motor spirit and jet fuel. Sylvia (2019) described **s**oil contamination by petroleum hydrocarbon as a global environmental problem attracting public attention.

2.2 Empirical Review

A study by (Nayda et al., 2018) on the effectiveness and eco-friendliness of corn cob as a bioabsorbent for removing azo dye, reported that corn cob can be used as a promising bioabsorbent to remove dye contaminants in water and wastewater. (Eden products, 2024) reported that in the agricultural sector, corn cob granules are widely used as a carrier for animal feed additives and it provide a natural means of effectively mixing and delivering nutrients to animals. Corn husk can be used as composite material in the production of bioplastics (Chinmay, 2022). Corn husk can also be utilized to produce a wide range of products such as nanocomposites, bioplastics, wood plastic composites, flame retardants and acoustic panels. (Aditi *et al*., 2022)

3.0 METHOD

3.1 area of the study

The area of this study is Yenagoa. Yenagoa is a Local Government Area and the capital city of Bayelsa State in South- South geopolitical zone of Nigeria. The city is located in the southern part of the country at coordinates $4^0 55' 29'' N 6^0 15' 51'' E$. Yenagoa lies on a coastal flood plain with an average height of about 15mters above sea level (Ohwo, 2014). The city is a riverine settlement. It is made up of fusion of several smaller communities that were settled along the Epie Creek, thereby forming a linear settlement. Fig. 3.1 is the map of Yenagoa the area of the study.

3.2 Method

Bags of corn were bought from corn sellers in Agudama Epie market in Yenagoa Local Government Area of Bayelsa State. The corns were then peeled to collect the husks. The corn kernels were removed from the peeled corn and the cobs were collected for the purpose of the study. The husks were cut into smaller pieces with a machete and packed into garri bags as the composting chamber. The Corn cobs were grater into smaller size by means of manual grater and also packed into separate garri bags for composting. Water was sprinkled into each of the bags and then the bags were tightly tied with a rope to increase the temperature inside. The bags were loosed every four days and the content of each bag turned with the hand to aerate the content. After each turning, water was sprinkled to provide moisture to the organic materials to provide the enabling environmental condition for microbial decomposition of the contents and tied again. Both husks and cobs were composted for four months each.

Samples were collected from the matured composts for laboratory analysis in private laboratory in Port Harcourt Rivers State.

4.0 RESULTS AND DISCUSSIONS

4.1 Results

After composting the corn cob for four months some chemical characteristics of the corn cob compost were analyzed. The results of the chemical analysis are presented in Table 4.1

Table.4.1: **chemical characterization of the corn cob compost**

Parameters	sample (corn cob compost)
pH	8..20
TOC	8.76
TN (%)	0.84
Phosphate (mg/kg)	149.05
Potassium (mg/kg)	325.17

The result of the laboratory analysis of limiting nutrient contents of corn husks compost is presented in Table 4.2.

Table.4.2: **chemical characterization of the corn husk compost**

Parameters	sample (**corn husk compost**)
pH	6.82
TOC	8.93
TN (%)	2.86
Phosphate (mg/kg)	1.845
Potassium (mg/kg)	370.16

4.2 Discussion

The addition of organic compost into polluted soil has been shown to increase soil physical, chemical and biological properties. (Jeromo et al., 2022) reported that compost significantly benefits soil by improving the soil health. It increases the soil infiltration rate, moisture content, total carbon content, the biomass content and then soil yield.

Composting of organic waste helps to reduce the amount of waste that will end up in the landfill or waste dump sites and therefore conserve land space. Utilization of organic composts as soil amendment provides a beneficial approach of managing waste. Rather than discarding organic remains as wastes, it can be converted to resource by composting. In this study, Corn cobs and corn husks were composted and the limiting nutrient (N.P.K) Contents in the composts were analyzed and compared as possible stimulating agents for bioremediation of petroleum hydrocarbon polluted soil. The result of the laboratory analysis of corn cob is presented in Table 4.1 while that for the analysis of corn husk is presented in Table 4.2. The result showed that pH of corn cob compost is 8.20 while that of the husk is 6.82. Total carbon was 8.76 in corn cob and 8.93% in the husk compost. Total Nitrogen is 0.84% in cob and 2.86% in the husk. Phosphate is 149.05% in cob and 1.845% in corn husk compost. Potassium is 325.17mg/kg in the corn cob and 370.16mg/kg in the corn husk compost. This showed that corn cob is richer in phosphate than the corn husks compost. The corn husk compost is richer in Nitrogen, potassium, and organic carbon than the corn cob compost.

The significance of these limiting nutrients in bioremediation process cannot be over stressed. Nitrogen and phosphorus play a significant role in stimulating microbial metabolic activities. Nitrogen is basic component of plants cell as well as microorganisms, as a constituent of proteins, nucleic acids and chlorophyll. It enters soil through organic and inorganic fertilizers. Microbial mineralization of nitrogen leads to the enrichment of the soil with nitrogen which is to improve soil health. Microorganisms also need nitrogen to synthesize their body proteins and nucleic acid.

Phosphorus is one of the most limiting plan nutrients. About 30 – 40% of the world arable land is limited by phosphorus availability (Nesme *et al*., 2018; Shi et al., 2021). Microorganisms have developed mechanisms to mobilize and mineralize phosphorus which ultimately promote plant growth in terrestrial ecosystem (Shi et al., 2021). Phosphorus is building block of microbial cells and other living things. It is an important part of the structure of microbial DNA. Cells use phosphorus to make membranes and several other molecules used in metabolic activities. A study by (Ramesha et al., 2022) find that PAHs degradation rates were stimulated by organic fertilizer in low microbial diversity soil, the degradation rate was found to double that in soil without

organic amendment. This could be attributed to the enrichment of the soil with Nitrogen and phosphorus which enhance the metabolic activities of the soil microbial community. Potassium is a vital ion in the normal physiological process of every organism. Potassium ions are needed in the establishment of resting membrane potentials that ensure proper functioning of muscles and nerves in organisms. In bacteria, potassium plays important role in maintaining the osmotic pressure, pH and membrane potentials. Potassium ions also help to regulate the genes and the activities of enzymes in bacteria and other prokaryotes. (Janina *et al*., 2022) reported that Potassium ion play important role in osmoregulation, pH homeostasis, regulation of protein synthesis, enzyme activation, membrane potential adjustment and electrical signaling for microbial survival

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

Utilization of organic compost as soil amendment provides a beneficial approach of managing waste. Instead of hulling organic waste to dump sites or landfill with ever declining land space availability for dump sites, it can be rather converted to resource by composting. In this study we have successfully composted corn cobs and corn husks. The composts contain considerable level of some limiting nutrients hence can be used as soil amendment to stimulate bioremediation of polluted soil.

5.2 Recommendations

Based on the findings of the study, the following recommendations are made.

I. Nigerians should develop the habit or culture of composting organic waste to so that the compost emanating from the waste can be used as soil amendment or conditioner instead of carrying every waste to the dump sites.
II. Further research to optimize the nutrient content of corn cobs and husks compost should be sponsored in order to derive economic benefits from these waste products.
III. Government should commission a research team to conduct research on the industrial utilization of agro wastes.

REFERENCE

Andrew S. Madison., Skyler J.Sorby., Yingnan Wang and Trent A. Key (2023). Increasing *in situ* bioremediation effectiveness through field – scale application of molecular biological tools. *Fron. Micrbiol*. Vol. 13 -2022 10 February, 2023. https://doi.org/10.3389/fmicb.2022.1005871

Aditi Sarker Ratana. Anik Ghost and Samrat Mukhopadhyay (2022). Advances and prospects of corn husk as a sustainable materials in composites and other technical applications. Journal of Cleaner Production. Vol. 371, 15 October 2022, 133563. https://doi.org/10.1016/j.jclepro.2022.133563

Raman Kumar Ravi., Shalini Gupta and Reeta Verma (2022). Bioremediation of petroleum contaminated soil in new technologies and recent approaches. Ebook 1SBN 87883969-534-6.. Retrieved from www.intech open.com/l

Das, N. and Chandran, P. (2011). Microbial Degradation of Petroleum Hydro-carbon Contaminants: An Overview. *Biotech. Res*. Int.2001: 1-13.

Okpokwasili, G. C. and Oton, N. S. (2006). Comparative applications of bio- reactor and shake flask systems in the laboratory treatment of oil sludge. *Int. J. Environ.Waste Manag. 1*(1), 49-59.

Chikere, C.B. and Ughala, E. (2011). Preliminary screening of hydrocarbon utilizing bacteria harbouring plasmids. TWOWS Afr. Int. J. Sci. Technol. 2: 26-36.

Chikere, C.B., Okpokwasili, G.C. and Chikere, B.O. (2011). Monitoring of microbial hydrocarbon remediation in the soil. 3Biotech. *1* (3),117-138.

Chikere, C.B. and Azubuike, C.C. (2013). Catechol-2,3-Dioxygenase screening in putative hydrocarbon utilizing bacteria. Int. Res. J. Microbiol., *4* (1), 1-6.

Chikere, C.B. and Azubuike, C.C. (2014). Characterization of hydrocarbon utilizing fungi from hydrocarbon polluted sediments and water. *Nig J. Biotech*. Vol. *27*, 49 – 54

Chinmay Chari (2022). How corn husk can be used in different materials. *Journal of cleaner Production*. https://doi.org/10.1016/j.jclepro.2022.133563.

Eden products (2024). The role of corn cob in sustainable industrial practices. 17th May, 2024 www.productsltd.co. uk

Elizabeth Temitope Alori., Alhasan Idris Gabasawa., Chinyere Edna Elenwo and Oluwadolapo Ololade Agbeyegbe (2022). Bioremediation techniques as affected by limiting factor in soil environment. *Fron. Soil Sci*., 4 August Vol. 2-2022. https://doi.org/10.3389/ fsoil. 2022.937186

Hesham, A.E., Alamri, S.A., Khan, S., Mahmoud, M.E. and Mahmoud, H.M. (2009). Isolation and Molecular Genetic Characterization of a Yeast Strain able to Degrade Petroleum Polycyclic Aromatic Hydrocarbons. *Afri. J. Biotech*., *8*(10), 2218-2223.

Jacques, R.J.S., Okeke, B.C., Bento, F.M., Teixeira, A.S., Peralba, M.C.R. and Camargo, F.A.O. (2008). Microbial consortium bioaugmentation of a polycyclic aromatic hydrocarbons contaminated soil. *Bioresour. Technol*. 99: 2637-2643.

Janina Stautz., Yvonne Hellmich., Michael F. Fuss., Jakob M. Silberberg., Jason R. Devlin., Randy B. Stockbridge and Inga Handelt (2021). Molecular mechanisms for bacterial otassium homeostasis. Journal of Molecular BiologyVol 433 Issue 16, 6 August 2021. https://doi.org/10.1016/j.jmb.202 1.166968

Jerome Wright., Scott Kenner and Bret Lingwail (2022). Utilization of compost as a soil amendment to increase soil health and to improve crop yields. Journal of Soil Science, Vol, 12 No. 6 June 2022. Doi:10.4236/ojss.2022.12 6009

Nar Singh Chauhan (2019). *Human and microbes in health and disease. doi:http://dx.doi.org/10.5772/intechope n.85217*

Nayda Karina Berber Villamar., Alma Rosa Netzahuatl-Munoz., Liliana Morales Barrera., Griselda Ma, Chavez-Camarillo., Cesar Mateo Flores-Ortiz and Eliseo Crisiani-Urbina (2018). Corn cob as an effective, eco-friendly and economic bioabsorbent for removing the azo dye Direct Yellow 27 from aqueous solutions. *PLos One*, 13(4): e0196428. Published online 2018 April 26. Doi: 10.1371/ journal.pone. 0196428

Nesme, T., Metson, G. S and Bennett, E.M (2018). Global phosphorus flows through agricultural trade. Glob, Environ Change 50, 133 – 141. Doi.10.1016/j.gloenvcha.2018.04.004

Nweke CO, Okpokwasili GC (2003). Drilling fluid base oil biodegradation potential of a soil Staphylococcus species. *Afr. J. Biotechnol*. 2: 293 – 295.

Ramesha H. Jayaramaih., Eleonora Egidi., Catriona A. Macdonald., Jun-Tao Wang., Thomas C. Jeffries., Mallayarapu Megharai and Brajesh K. Singh (2021). Soil initial bacterial diversity and nutrient availability determine the degradation rate of xenobiotic biodegradation. Microbial Biotechnology. 15(1), 318 – 336 published online 22021 Oct 24. Doi: 10.1111/1751-7915.13946

Sender R., Fuchs S., Milo R. (2016). Revised estimates for the number of human and bacteria cells in the body. *PLos Biology*, 14(8), e1002533

Shi Wang., Robert Walker., Marcus Schicklberger., Peter S. Nico., Patricia M. Fox., Ulas Karaoz., Romy Chak-raborty and Eoin L.Brodie (2021). Microbial phosphorus mineralization strategies across a natural nutrient limitation gradient and evidence for linking with iron solubilization traits.

Front Microbiol23 June, 2021.Volume 12 - 2021. https://doi.org/10.3389/fmic.2021 .572212

Syed ALI Hassan., Mueen Abbas., Waqar Mujahid., Waqar Ahmed., Saeed Ahmad., Abid Aslam Maan., Aamir Shehzad., Zuhaib F. Bhat and Rana Muhammad Aadil (2023). Utilization of cereal based husks to achieve sustainable development goals: Treatment of wastewater, biofuels and biodegradable packaging. Trends in Food Science & Technology. Vol.140, October 2023,104166. http://doi.org/ 10.1016/.tifs.2023.104166

Sylvia Adipah (2019). Introduction of Petroleum hydrocarbons contamination and its human effects. *Journal of Environmental Health Science and Public Health*. 3(2019):001 - 009

ENFORCEMENT OF INTERNATIONAL HUMANITARIAN LAW: NUREMBERG AND TOKYO TRIALS

Faith. Allison- Kulo
School of general studies, Bayelsa State Polytechnic, Aleibiri
Phone No 08033004986

ABSTRACT
The World War II that broke out in 1945 held the entire world spell bound, affected the socio-economic and political activities and life of the people of many nations. The war saw German government and Japanese meted serious crime and human rights violation against people of other nations such as Jews and Chines. The crime was unprecedented and ranges from millions of murder, wrongful imprisonment, torture, rape, theft and destruction of lives. The demand for justice and the need for accountability in the case of gross human rights violation resulted to the establishment of International tribunals to prosecute international human rights violators, war offenders and international human crime perpetrators. The aim of this paper is to appraise the trials and judgment of the Nuremberg and Tokyo international human rights tribunal and the legal implications to international and humans right law. The author adopted a textual review of the subject. The paper has highlighted the basis for international humanitarian law, establishment of International military tribunal in the form of Nuremberg tribunal and the Tokyo, the significance of the trials of these tribunals, their judgment and the implications. The paper also highlighted criticisms of the trials of the tribunals. It is concluded that; the international legal system has benefited immensely from these Tribunals as they have given impetus to the development of international law, Humanitarian Law, Human Rights and International Criminal law.

Key Word: International law, Human Rights, tribunals, humanitarian law.

1.0 INTRODUCTION

At the end of the world war II in 1945, while the nations of the world were celebrating the cessation of hostilities and the return of peace from the war that held the entire world spell bound affecting the socio- economic and political spheres of nations, there emerged Two war crime Tribunal in Nuremberg (Germany) and Tokyo (Japan) to redress and enforce the violation of international humanitarian law, Human Rights and laws relating to wars in the course and during the world war II. These Tribunal are known as the Nuremberg and Tokyo Trials in international law.

The Nuremberg trials were a series of military tribunals held by the main victorious Allied Forces of the World War II, mostly notable for the prosecution of prominent member of the political, military and Economic leadership of the defeated Nazi Germany [1]. The trials were held in the city of Nuremberg, Barvaria, Germany in about 1945-46 at the palace of justice [2].

While in Nuremberg trials were on, the eleven of the Allied powers (Australia, Canada, china, France, India, the Netherlands, New Zealand, the Philippines, the Soviet Union and the United kingdom and the United States) prosecuted twenty- eight of the Japan top military, political and Diplomatic leaders for an assortment of war crimes committed in the south East Asia between about 1938 and 1945[3].

The enforcement of international humanitarian law (IHL) in the light of these two international military tribunals (IMT) which has had far reaching implications in not just the field of international humanitarian law, international Human Rights laws, international

[1]. http:// en. Wikipedia.org/ wiki / Nuremberg_Trial. Accessed 23/05/2010.
[2]. Ibid
[3]. http://en. Wikipedia.org/wiki/ international_ military_ Tribunal_ for_ the .... Accessed 23/05/2010 This is known as the international military tribunal for the far east or the Tokyo trial.

criminal law but the entire gamut of international law is the crux of this paper. In this presentation, we shall attempt to lay a foundation on the subject of international humanitarian law visa-vis international criminal law, the enforcement process relating to municipal and international perspective in cases of violations, with the Nuremberg and Tokyo Trials, attendant criticism shall be analyzed with recommendations and conclusion thereto and the way forward.

2.0 OVERVIEW OF INTERNATIONAL HUMANITARIAN LAW

2.1 International Humanitarian Law

Humanitarian Law derives from the basic principle that an individual is entitled to certain minimum right whether in peace or in war. He is entitled to Protection, security and respect; if wounded or captured, he is entitled to care and to human treatment; if dead, his body is entitled to decent treatment [4].

It has equally been contracted that, Humanitarian Law is made up of legal rules that have been formulated to take care of problems resulting from existence of armed conflicts. It deals with the management of casualty and the regulation of methods of war [5].

According to javaid Rehma;

> "*There are numerous definitions of international humanitarian Law, though in a study focused on international law human Rights. It can broadly and legitimately be visualized as a set of law aiming to protect human rights during international or non- international armed conflicts. The protection of the right of the individual during armed conflict bears a close relationship to the regime of international protection of human rights*[6].

Still on the subject, Hans peter Gasser submited that;

> *International Humanitarian Law also called " law of armed conflict' and previously known as the "law of the war" is a special branch of law governing situation of armed conflict in a war. International Humanitarian Law seek to mitigate the effects of war, first in that it limit the choice of means and methods of conducting military operations and secondly in that it obliges the belligerent to spare person who do not or no longer participate in hostile action* [7].

The subject of Humanitarian Law therefore principally relates to the treatment of human being, be they military or civilians, as human in period of hostilities and the method of war in order not to affect human rights during and after the war as regulated in international law.

3.0 ENFORCEMENT OF INTERNATIONAL HUMANITARIAN LAW:

The question at issues in Humanitarian Law, no matter varied and complicated can be reduced to two fundamental problems; Viz, the problem of balancing humanity against military necessary, and the obstacle in doing so posed by state sovereignty[8].

The enforcement of international humanitarian law raises serious difficulties. The First issue relates to the creation of international and National crime of international humanitarian law [9].

To this end, professor Meron opined that;

> *Having regard to the nature of the violation and the circumstances in which such violation take place, any enforcement of Humanitarian norms appears particularly challenge. In the light of these challenge, attempts have been made to establish some*

---

[4]umozuruike, o.u introduction to international law,(ibandan: spectrum law publisher, 1993) p 212

[5]omoruyi, I. O. "the outlawry of war in international law; fact of functions"

[6]. Rehmen javiad, international Human Rights law, (London: person Education limited, 2010) at p 765

[7]. Gasser, Hans peter; international humanitarian law; an introduction (Berne : Haupt publisher 1993) p3.

[8]. Kalshoven and zegvels; costrains on the waging of war; an introduction to International Humanitarian Law

[9] Ibid

albeit rudimentary, mechanism for enforcing International Humanitarian Law [10].

State that are parties to the Geneva convention (and protocol additional go the convention) are obliged to follow the provision of the Treaties [11].

However, prior to the Geneva convention in 1949, the world leaders took the bull by the horns, from the existing customary international law, international Humanitarian Law and International crime law to address cases of human rights and humanitarian law violation at the end of the world war II in1945 given rise to the International military tribunal of Nuremberg and Tokyo under examination.

One of the founders of the red cross movement, which grew up in Geneva in 1860s, urged a draft state for an international criminal Court. Its task would be to prosecute breaches of the Geneva convention of 1864 and other humanitarian norms[12].

In 1913, a commission of inquiry set by the Carnegie foundation to investigate atrocities committed during the Balkan wars used the provision of the Hague convention IV as a basis for its description of war crime[13].

Immediately, following World War I, the commission of responsibilities of the Authors of war and enforcement of penalties, established to examine allegation of war crime committed by the central power, did the same. But the actual enforcement prosecution of violence of Hague convention started with the Nuremberg trials [14].

It can therefore be safely concluded that the emergence of these international military tribunal was not one day affair. The demand for justice and the need for accountability in the case of gross human rights violation have provided the impetus for the establishment of National and International tribunals[15].

In historical terms, while many of the effort collapse, there has nevertheless been some limited success. International military tribunal in the form of Nuremberg tribunal and the Tokyo (far east) were established in the aftermath of the World War II [16].

3.1 The Nuremberg trials

In November 1945, in the German city of Nuremberg, the victors of the World War II began the first International war crime trial. The choice of the city was significance for it was here that the national socialist party held its annual rallis[17].

The trial was a reaction to the holocaust. The holocaust was an unprecedented crime a crime composed of millions of murder, wrongful imprisonment, and torture, of rape, theft and destruction [18]. In the immediate aftermath of the holocaust, the world was faced with a changed of how to seek justice for an almost unimaginable scale of criminal behavior and human rights violations. The international military tribunal held in Nuremberg Germany attempted to breach this immense challenge in a legal basis[19]

The legal basis for the trial was established by the London charter, issued on August 8, 1945 which restricted the trial to "punishment of the major war criminal of European Axis Countries"[20]. Some 200 German war crime defendant were tried at Nuremberg and 1600 other were tried under the traditional channel

[10] Ibid
[11]. Common article 1 Geneva Convention 1949
[12]. Schbas , A. W. An introduction to the international criminal Court, (Cambridge university press, 3rd Ed) p2
[13]. Ibid
[14]. Ibid
[15]. Ibid
[16]. Ibid
[17]. http:// www.bbc.co.uk/history / world wars / wwtwo/ Nuremberg article o. Accessed 6/14/ 2010
[18]. http:// www.ushmm.org / museum / exhibit/focus / war crime trials/ commer . Accessed on 6/14/2010
[19]. Ibid
[20]. Ibid

of military justice, while the legal basis of the jurisdiction of the court was defined by the instrument of surrender of Germany [21].

The instrument for this trial called in London agreement was signed by representation of the United States, the United Kingdom, France and the Union of Soviet socialist republic (USSR) in London on August 8, 1945, the other law No. 10 was issues by the Allied control council in Berlin on December 20, 1945[22].

It has been asserted that; The London agreement provided for the establishment of the international military tribunal, composed of one judge and one alternate judge from each of the signatory nations, to grt sar criminals. Under the London agreement the crimes charged against defendant fell into three categories:

I. Crime against peace - that is crime involving the planning, initiating and waging of aggressive war.
II. War crimes - that is, violation of the laws and customs of war as embodied in the convention adopted at the Hague conference (international peace conference of 1899 and 1904) and
III. Crime against humanity, such as the extermination of racial, ethnic and religious group and other large-scale atrocities against civilian [23]

On October 18, 1945, the chief prosecutor lodged an indictment with the tribunal charging 24 individuals of aggressive war, extermination of war and the murder, mistreatment and deportation to slave labour of hundreds of thousands of inhabitants of counties occupied by Germany during the war, which are all violations of human rights and humanitarian law [24].

3.2 Judgment:

Trial began on Nov. 20, 1945 while judgment of the tribunal was handed down on September 30, October 1, 1946. The judgment is worthy of note. Accordingly, it has been observed that:

The judgment of the tribunal, in addition to its findings on the fact, represented a considerable contribution to international law. The judgment dealt at some length with the defense contention that the prosecution of crime against peace was contrary to the "nullum crimen sine lege" principle. It engaged in a detailed, if, in the final analysis unconvincing, review of pre- war development, in particular the 1928 Kellog - Briand pact. It used the treaty (which was not interested to create crime liability) and a number of non-binding sources to create a case that aggressive war was criminalized by customary International law[25]".

Thus, notable feature of the decision was the conclusion, in accordance with the London agreement;

> "That to plan or instigate an aggressive war is a crime under the principle of International Law. The tribunal rejected the contention of the defense that such acts had not previously been defined as crime under international law and that therefore the condemnation of the defendant would violate the principle of justice prohibiting ex- facto punishment. It also rejected the contention of a number of the defendant that they were not legally responsible for their act because they performer the act under the orders of superior authority. According to the tribunal, "the true test ... Is not existence of the order but whether moral choice (in executing it) was in fact possible".
>
> With respect to the crime against humanity, the tribunal found overwhelming evidence of systematic rules of violence, brutality and terrorism by the German government in the territories occupied by its forces.

[21]. Ibid
[22]. War crimes trial, Microsoft Encarta 2009
[23]. Ibid
[24]. Ibid
[25]. Rebert cryer et Al, an introduction to International criminal law

Millions of persons were destroyed in concentration camps, many of which were equipped with gas Chambers for examination of Jews, Roma (Gypsies) and member of other ethnic or religious group. Many of them died because of inhuman treatment. The tribunal also found that atrocities had been committed on large scale and as matter of official policy[26]

The Tokyo trial

The International military tribunal for the far east was constituted under the Charter promulgated in January 19, 1946 by General Douglas Macarthur, supreme commander for the allied powers[27].

The tribunal was established to implement the Cairo Declaration, the Potsdam Declaration, the instrument of surrender and the MOSCOW Conference[28].

The Tokyo tribunal was convened in May 3, 1946. After the testimony, counter-testimony, rebuttal, counter- rebuttal, and closing statement of both the prosecution and defense, the trial was concluded in April, 1948 and the court adjourned. The court then reconvened on November 4, 1948, the reading of the verdict concluded on November 12, and sentence were handed down[29].

In the constitution of the Tokyo tribunal, each of the participating Allied power was represented by a chief prosecutor and a support staff comprised of assistant prosecutors, investigator and miscellaneous other personnel. The defendant were represented by over one hundred attorneys, three quarters Japanese and one quarter American, plus support staff of their own[30].

The prosecution offered compelling evidence that the defendant had violated more than a hundred international treaties and committed countless war crimes over the previous twenty years[31].

In particular, the evidence showed that Japan Invaded Nanking, china in 1937, at least 20,000 women were raped by Japanese soldiers, and at least 10,000 civilian were slaughtered. Thousands of Chinese civilians were captured during the massacre and deported to Japanese labour camp where they were forced to work at gunpoint. The Japanese army had brutally marched 50,000 US POWs across the Batan peninsula in 1942. US, Soviet, Phillipino, and Chinese POWs had been used as subject in barbaric scientific experiment perform at Japanese camps throughout the war[32].

The conclusion reached by the II Nations tribunal were generally parallel to those embodied in the judgment given in Nuremberg of the 28 defendant named in the indictment, seven were condemned to death by hanging, and all but two of the other were sentenced to life imprisonment [33].

4.0 THE SIGNIFICANCE OF THE NUREMBERG AND TOKYO TRIALS:

The two major war crime trials have immensely contributed not just to the field of international law, but in the particular field of international criminal law, international Humanitarian Law and International human rights laws. These contributions are hereby highlighted as follows;

1. Nuremberg and Tokyo Trials were notable step in the evolution of international penal law[34].
2. The trial of Japanese General Yamashita Tomoyuki was important in establishing the principle of "command to prevent military personnel from committing war crimes and crime against humanity. This principle resurfaced more than 50 years later in the trial of former Yugoslav president Slobodan Milosevic[35].

---

[26]. Ibid
[27]. Ibid
[28]. Ibid
[29]. http:// www.japanfocus.org/ Awaya - kentaro/ 206. Accessed 6/14/ 2010.
[30]. Ibid
[31]. Ibid
[32]. Ibid
[33]. Ibid
[34]. Ibid

3. At Nuremberg, Nazi war criminals were charged with what the prosecution called genocide but the term did not appear in the substance provision of the statute and the tribunal convicted them of crime against humanity for the atrocities committed against Jewish people of Europe. Within weeks of the judgment efforts began in the General Assembly[36]
4. The Nuremberg trials evolved certain rules called the "Nuremberg principle" which aided the international law commission to codify certain rules of international criminal law and humanitarian law referred to as the code of crime against peace and security of mankind, a job that took considerably longer time, since 1950, but the final version of the code of crime was adopted by the commission in 1996[37].
5. It was the first time that International criminal trials and violation of humanitarian law were conducted and convention obtained [38].
6. International criminal law and humanitarian law were expanded through the induction, recognition and affirmation of crime against humanity as well as the crime of genocide.
7. The international criminal and humanitarian law made distinct advances toward the development of the principle of individual criminal responsibility and formulation of a scheme of accountability through criminal prosecution for violation of human rights [39].
8. The jurisprudence emerging from the Nuremberg and Tokyo Trials advance greatly the norms pertaining to international criminal justice and humanitarian law and also provided and inspirational force behind further development of general International law [40].

Criticisms:

1. The trial and conviction resulting from these trials were viewed by many as a reflection of victor's justice which was one sided and biased[42].
2. The Allied forces tried the Germans (Nazi) and Japanese war criminals and humanitarian law violators for the offense which the victorious Allied powers had themselves committed [43].
3. There were also criticism of the failure to apply the legal principle of "nullum crimen nulla peona sine previous lege poenali" (no crime, no punishment without a previous panel law)[44] the critics argued that the charge against the defendants were only defined as crime after they were committed and that therefore the trial was invalid [45].
4. The international military tribunal has been criticized not to have any international charter but rather the tribunal established by the Allied force. The tribunal was not so much an international tribunal but rather an Allied Force tribunal [46].
5. The rules of evidence and procedures seem hopelessly inadequate when one considers the complexity of the rules and procedures that apply [47]

[36]. Ibid
[37]. Ibid
[38]. Ibid
[39]. Ibid
[40]. Ibid
[41]. Ibid
[42]. Ibid
[44]. Ibid
[45]. Ibid
[46]. Illias Bantekas & Susan Nash, international criminal law (London; Roughledge - Cavendish 2007) p. 505
[47]. Ibid

6. The rules of procedure and evidence used at the post world war II crime trial were essentially American devised and based on American law, thus, they were applied to produce, fair and unfair trial, just or unjust results [48].

5.0 CONCLUSION AND RECOMMENDATION

5.1 Conclusion

In this paper we have made a critical presentation of the enforcement of international humanitarian law, using the Nuremberg and Tokyo Trials as a case study.

The subject of the humanitarian law and two major world war crime trials were discussed with their merit, criticisms and recommendations.

While we agree that some pitfalls and injustice may have been occasioned as seen in the criticism, the significant role and contribution of these two tribunal Court cannot be overemphasized. The international legal system has benefited immensely in these Tribunal as affects the development of international law, Humanitarian Law, Human Rights and International Criminal law.

5.2 Recommended

In view of the significance and criticism discussed above, it is apposite to recommend that while crime against humanity, rules of war and rules of international law should be punished, it is most desirable that fair trial should be ensured.

While the war criminal deserved to be punished to ensure the sanctity of the human person in period of conflict and peace, the one sided and lopsided trial with alien rules of evidence, as well as application of rules of crime not defined before commission significantly affected the goal of the entire trial - justice

Thus, it is recommended that fairness to all should be the guiding principles to ensure enduring rules of international humanitarian law and respect for human rights which seem to be the whole essence of the tribunal.

[48]. Ibid

PERFORMANCE CHARACTERISTICS AND ECONOMIC ANALYSIS OF BROILERS SUBJECTED TO TIME-LIMITED FEEDING PROTOCOL

Geoffrey Etekpep

Abstract

Poultry farming is type of agricultural practice for egg snd meat production. It provides a veritable platform for young school leavers_ pensioners and agribusiness-oriented people to go into commercial agriculture. The productivity of poultry birds depend heavily on the feeding giving to them. This study investigates the performance characteristics and economic implications of broilers subjected to a time-limited feeding protocol. Completely randomized design was adopted for the study with 4 treatments and 5 replicates per treatment. The broilers were subjected to varying feed restriction periods (0, 4, 6, and 8 hours daily). Key performance indicators such as average daily feed intake (ADFI), body weight gain (BWG), feed conversion ratio (FCR), and mortality rates were recorded. The effects of varying fasting durations on growth metrics, feed intake, and overall economic viability were analyzed. Arising from the findings of the study, it is concluded that time-limited feeding protocols present a promising strategy for enhancing the economic performance of broiler production.

Keywords: performance, characteristics broilers, limited feeding and protocol

1.0 INTRODUCTION

Time-limited feeding (TLF) protocols have gained attention for their potential to enhance broiler welfare and optimize production efficiency. This manuscript explores how different fasting periods impact growth performance and economic returns in broiler production. Implementing time-limited feeding (TLF) in broiler production offers several economic benefits: Reduced Feed Costs: TLF can lower overall feed consumption without significantly impacting final body weight due to compensatory growth, leading to cost savings on feed expenses (Balay *et al,* 1992).

Improved Feed Efficiency: Broilers subjected to TLF often exhibit better feed conversion ratios, meaning they convert feed into body weight more efficiently, further enhancing profitability. Lower Mortality Rates: Feed restriction strategies have been associated with reduced mortality and culling rates, which directly increases profit margins for producers. Enhanced Meat Quality: Time-Limited Feeding can improve carcass characteristics, contributing to higher market value for the meat produced. These factors collectively enhance the financial viability of broiler production through optimized resource use and improved growth performance. (Balog, *et al.,* 2000; Lippens, et al., 2000).

The long-term economic impacts of time-limited feeding (TLF) on broiler farms include: Reduced Feed Costs: TLF can significantly lower feed consumption, which constitutes 70-75% of production costs, leading to substantial savings over time. Improved Feed Conversion Ratio: TLF often enhances feed efficiency, allowing broilers to achieve similar or better weight gains with less feed, thus improving profitability (Bortoluzzi *et al.*, 2013). It lowers Mortality and Culling Rates by mitigating health issues associated with rapid growth, TLF can reduce mortality rates, increasing overall flock viability and profit margins. Enhanced Meat Quality: TLF can also lead to better carcass characteristics, which can command higher prices in the market, contributing to increased revenue (Rincon, 2000; Somaia, 2019). Sustainable Practices such as Implementation of TLF may also improve animal welfare and reduce environmental impacts, aligning with consumer preferences for ethically raised poultry, potentially boosting market demand. Overall, TLF represents a viable strategy for enhancing the economic sustainability of broiler production in the long term (Alkhair, 2018).

The implementation of time-limited feeding protocols, also known as feed restriction strategies, in broiler production has garnered attention for its potential to improve economic outcomes. Feed costs represent a significant portion—approximately 70-75%—of total broiler production expenses. By employing time-limited feeding protocols or feed restriction, producers can effectively reduce these costs (Somaia, *et al,* 2014). key economic advantages or benefits of restricted

feeding includes: Reduced Feed Consumption: Time-limited feeding reduces the overall amount of feed consumed without adversely affecting final body weight due to compensatory growth during re-feeding periods (Dozier, *et al*., 2002; Gobane, 2014).

This leads to lower feed costs per kilogram of weight gain. Improved Feed Conversion Ratio (FCR): Studies indicate that broilers subjected to feed restriction often exhibit better FCR, meaning they convert feed into body mass more efficiently. This improvement can lead to increased profitability per bird. Lower Mortality and Culling Rates: Implementing feed restriction can contribute to reduced mortality and culling rates, further enhancing economic returns by maximizing the number of birds available for sale (Leeson and Zubair, 1997)

Another economic benefit of restricted feeding is compensatory growth. Compensatory growth refers to the accelerated growth rate that occurs after a period of feed restriction. This phenomenon is crucial for understanding the economic viability of time-limited feeding: Re-feeding Period: After the restriction phase, broilers typically increase their feed intake significantly, compensating for the previous deficit (Leeson and Summers 2009). This behavior can lead to rapid weight gain, which is economically beneficial if managed correctly.

The effectiveness of feed restriction can vary depending on the timing and duration of the restrictions. Early restrictions followed by adequate re-feeding have been shown to yield better economic returns compared to continuous ad libitum feeding (Leeson, 1996; Rincon, M.U., 2000). While short-term benefits are evident, the long-term economic viability of time-limited feeding protocols must also be considered.

Incorporating cost-effective ingredients during the restricted feeding periods can further enhance savings Pan, *et al.,* 2005). Using less expensive fillers or alternative energy sources can reduce overall feed costs while maintaining nutritional adequacy. The ability to adapt feeding strategies based on fluctuating feed prices can lead to significant cost reductions. Utilizing models that optimize feed formulations in response to market conditions helps producers remain competitive. (Mahmood, *et al.*, 2007; Ozkan, *et al.*,2006).

Objective of study

The main aim of the study is to quantify the effects of varying restriction levels and establishment of customized protocols for practical broiler production:

The specific objectives are:

1. to determine the body weight gain of broiler chickens under (0 hours restriction), moderate (4 hours restriction restriction), (6 hours restriction restriction), and (8 hours restriction).
2. to determine the total feed intake of broiler chickens subjected to the different restriction treatment.
3. to calculate the feed conversion ratio (FCR) of broiler chickens under the different restriction treatments.
4. to determine the mortality rates of broiler chickens exposed to the different restriction treatments.
5. to compare the growth performance parameters (body weight gain, feed intake, feed conversion ratio (FCR), and mortality of broilers under the various restriction levels.

2.0 MATERIALS AND METHOD

2.1 Study Location and period

This experiment was carried out in Yenagoa, the capital city of Bayelsa State, Southern Nigeria. Yenagoa lies between longitude 4^0 55' N and latitude 6^0 15"E with average monthly temperature of 71^0F and 87^0F and relative humidity of 59 – 98% an average rainfall of 241.52mm (Meteostate.com, October, 2023). The study lasted for a period of 8 weeks

2.2 Experimental Design

Sample Design: Completely randomized design with 4 treatments and 5 replicates per treatment. The broilers were subjected to varying feed restriction periods (0, 4, 6, and 8 hours daily). Key performance indicators such as average daily feed intake (ADFI), body weight gain (BWG), feed conversion ratio (FCR), and mortality rates were recorded.

Treatments:
T1 - Control (no restriction)
T2 – 4 hours feed restriction
T3 – 6 hours feed restriction
T4 – 8 hours feed restriction

Each of the 5 replicates consist of 5 randomly selected broiler chick, totalling 5

birds per treatment. The 100 selected chicks were randomly distributed across 12 pens (5 replicates x 4 treatments).

2.3 Data collection

The body weight gain of the birds was taken weekly by weighing the birds individually in each treatment replicate and the mean for each treatment group recorded. Daily feed consumption data was collected by weighing the balance of the feed in each treatment replicate and subtracting from the initial weight of the feed fed on the previous ration and the mean feed consumption recorded for each treatment group on weekly basis. The feed conversion ratio was computed by dividing the amount of feed consumed by the live body weight gain of the birds in each treatment group. Mortality was to be recorded on daily basis, however, there was no mortality in any treated group. Total feed cost per bird was determined at the end of the study by multiplying the total amount of feed consumed in kilograms by the unit cost of a kilogram in both broiler starter and finisher diets respectively and divided by the total number of birds in each treatment group.

2.4 Data analysis

At the end of the study, data collected was analyzed using IBM, SPSS (Version 22,2013). Significant means at probability level less than 0.05 was separated using Duncan Multiple Range Test (1990). Any significant differences between means was indicated using superscripts.

3.0 RESULTS AND DISCUSSIONS

3.1 Results

The result for performance characteristics and economic analysis of broilers subjected to time limited feeding protocol is presented in Table3.1. The result indicated that significant disparity ($P<0.05$) existed in the various restricted time (0, 4, 6, and 8 hours) respectively. However, FCR was not severely affected by fasting duration.

Economic Analysis: The cost of production decreased with optimized feeding protocols, enhancing the benefit-to-cost ratio (BCR) for producers.

Table 3.1: performance characteristics and economic analysis of broilers subjected to time limited feeding protocol of 0, 4, 6, and 8 hours per day for 4 weeks

Restriction time	Total Body wt gain (kg)	Feed consumption (kg)		Total feed consumption (kg)	Feed cost per bird (N)		Total feed cost	Mortality	FCR
		Starter feed consumed	Finisher feed consumed		Starts feed cost	Finisher feed cost			
0	2.0±0.1[a]	1	3.20±0.2[b]	4.20±0.4[b]	18	12.50±1.6	30.50±1.6[c]	-	2.10±0.1[a]
4	2.0±0.1[a]	1	2.89±0.2[b]	3.89±0.2[b]	18	11.21±0.3	29.21±0.3[b]	-	1.95±0.1[b]
6	1.75±0.2[b]	1	2.65±0.4[a]	3.65±0.4[a]	18	10.35±0.6	28.35±0.6[a]	-	2.08±0.04[a]
8	1.72±0.2[b]	1	2.47±0.6[a]	3.47±0.6[a]	18	9.69±1.2	27.69±1.2[a]	-	2.01±0.1[a]

Means with different superscript on the same row are significantly different ($P<0.05$)

3.2 Discussion

Broilers subjected to time-limited feeding protocols generally show reduced weight gain compared to those with ad libitum access. Studies indicate that feed restriction negatively impacts final live weight and carcass weight, particularly as birds age, with significant differences noted ($P < 0.01$) in performance metrics between restricted and control groups.(Yu and Robinson, 1992; Tolkamp*, et al*., 2005) reported that restricted feeding can enhance feed efficiency and lower feed costs per kilogram of weight gain, leading to improved economic outcomes despite lower overall weight This suggests a complex balance between growth performance and cost-effectiveness in broiler production. The findings of this study suggest that while Time Limited Feeding can initially reduce growth rates, it may lead to better long-term outcomes

in terms of feed efficiency and economic returns. (Zhan, *et al*., 2007; Zubair and Leeson, 1994) reported that the ability of broilers to adapt their feeding behavior under restricted conditions indicates potential for improved management practices.

4.0 CONCLUSION AND RECOMMATIONS

4.1 Conclusion

Poultry is financially demanding, more so with the increasing cost of commodities in Nigeria. Feeds cost constitute a major component of poultry production. Therefore_ for poultry business to be profitable, poultry farmers must device strategic cost-effective method of poultry production. In this study the researcher has determined the effects of varying restriction levels and established customized protocols for practical broiler production. Based on findings of the study, it is concluded that time-limited feeding protocols present a promising strategy for enhancing the economic performance of broiler production. By reducing feed costs, improving FCR, and leveraging compensatory growth dynamics. Producers can achieve significant financial benefits while maintaining production efficiency.

4.2 Recommendations

The study recommends that time limited feeding protocols as such, these should be considered as an integral part of modern broiler management practices by poultry farmers and agricultural agencies.

Future research should focus on long-term impacts and broader applications within the poultry industry.

REFERENCES

Alkhair, S.M., (2018). Effects of feed restriction on growth performance of broiler chickens: restriction during the starter and finisher period. LAP LAMBART Academic Publishing, Germany.

Balay, M., E.A. Dunnington, W.B. Gross and P.B. Siegel, (1992). Restricted feeding and broiler performance: Age at initiation and length of restriction. Poult. Sci., 71: 440-447.

Balog, J.M., N.B. Anthony, M.A. Cooper, B.D. Kidd, G.R. Huff, W.E. Huff and N.C. Rath, (2000). Ascites syndrome and related pathologies in feed restricted broilers raised in a hypobaric chamber. Poult. Sci., 79: 318-323.

Bortoluzzi, C., J.I.M. Fernandes, J.P. Contini, T.J. Gurski, A.F.G. Esser and K. Prokoski, (2013). Quantitative feed restriction from 35 to 42 days of age for broiler chickens. Rev. Bras. Saúde Prod. Anim., 14: 778-784.

Camacho, M.A., M.E. Suarez, J.G. Herrera, J.M. Cuca and C.M. Garcia-Bojalil, (2004). Effect of age of feed restriction and microelement supplementation to control ascites on production and carcass characteristics of broilers. Poult. Sci., 83: 526-532.

Dozier, W.A., R.J. Lien, J.B. Hess, S.F. Bilgili, R.W. Gordon, C.F. Laster and S.L. Vieira, (2002). Effects of early skip-a-day feed removal on broiler live performance and carcass yield. J.Applied Poult. Res., 11: 297-303.

Gobane, Z., (2014). The effect of feed restriction duration on growth performance, physico-chemical characteristics and fatty acid composition of meat from broilers. Ph.D. Thesis, University of Fort Hare.

Leeson, S. and A.K. Zubair, (1997). Nutrition of the broiler chicken around the period of compensatory growth. Poult. Sci., 76: 992-999.

Leeson, S. and J.D. Summers, (2009). Commercial Poultry Nutrition. Nottingham University Press, Nottinghamshire, UK.

Leeson, S., L. Caston and J.D. Summers, (1996). Broiler response to energy or energy and protein dilution in the finisher diet. Poult. Sci., 75: 522-528.

Lippens, M., G. Room, G. de Groote and E. Decuypere, (2000). Early and temporary quantitative food restriction of broiler chickens. 1. Effects on performance characteristics, mortality and meat quality. Br. Poult. Sci., 41: 343-354.

Mahmood, S., S. Mehmood, F. Ahmad, A. Masood and R. Kausar, (2007). Effects of feed restriction during starter phase on subsequent growth performance, dressing percentage, relative organ weights and immune response of broilers. Pak. Vet. J., 27: 137-141.

Ozkan, S., I. Plavnik and S. Yahav, (2006). Effects of early feed restriction on performance and ascites development in broiler chickens subsequently raised at low ambient temperature. J. Applied Poult. Res., 15: 9-19.

Pan, J.Q., X. Tan, J.C. Li, W.D. Sun and X.L. Wang, (2005). Effects of early feed restriction and cold temperature on lipid peroxidation, pulmonary vascular remodelling and ascites morbidity in broilers under normal and cold temperature. British Poultry Sci., 46: 374-381.

Plavnik, I. and S. Hurwitz, (1989). Effect of dietary protein, energy and feed pelleting on the response of chicks to early feed restriction. Poultry Sci., 68: 1118-1125.

Rincon, M.U., (2000). Mild feed restriction and compensatory growth in broiler chicks. M.Sc. Thesis, Graduate School, University of Guelph, Canada.

Somaia, M.A., (2019). The effect of physical feed restriction during the starter period on broilers performance. Int. J. Livest. Prod., 10: 1-8.

Somaia, M.A., M.I. Omer and I.I. Hamid, (2014). The effect of finisher diet dilution with sand and wheat bran on broiler performance and carcass characteristics. Sudanese J. Agric. Sci., 1: 8-12.

Tolkamp, B.J., V. Sandilands and I. Kyriazakis, (2005). Effects of qualitative feed restriction during rearing on the performance of broiler breeders during rearing and lay. Poultry Sci., 84: 1286-1293.

Yu, M.W. and F.E. Robinson, 1992. The application of shortterm feed restriction to broiler chicken production: A review. J. Appl. Poult. Res., 1: 147-153.

Zhan, X.A., M. Wang, H. Ren, R.Q. Zhao, J.X. Li and Z.L. Tan, 2007. Effect of early feed restriction on metabolic programming and compensatory growth in broiler chickens. Poult. Sci., 86: 654-660.

Zubair, A.K. and S. Leeson, 1994. Effect of varying period of early nutrient restriction on growth compensation and carcass characteristics of male broilers. Poult. Sci., 73: 129-136.

AUTOMATED WEB-BASED STUDENT PROJECT VERIFICATION AND VALIDATION SYSTEM

[1]Efe Darel Gowon Kokogbiya and [2]Assor Dalton Emmanuel
[1]Department of Computer Science, Bayelsa State Polytechnic, Aleibiri
darelgowon351@gmail.com

[2]Department of Computer Engineering, Bayelsa State Polytechnic, Aleibiri
Email: kingassor@gmail.com

Abstract
It is a common phenomenon in higher institutions of learning that final-year students' projects are often managed in a paper-pen system where most of these students lay their hands on already completed projects and present the same to their supervisors without the knowledge of their supervisors. This had caused so many duplications of projects, words for words, and topics, year in, year out, and laziness on the part of the students replicating work without originality. This research is aimed at designing an automated web-based student project verification and validation system to enhance the monitoring of final year student projects at all levels. The system is a comprehensive tool that streamlines the process of verifying and validating student projects. It uses advanced artificial intelligence algorithms to generate academic abstracts based on the user's input. The system ensures accuracy and efficiency by automatically extracting key information from the project, such as objectives, methods, and results. In this research, a web-based student project duplication detection system was developed to monitor projects that had been implemented before to enable supervisors to detect repetitive project topics and guide the student's right to conduct original and unique projects that will advance the technological skill of the student as well as improve the technological advancement of our great nation. Furthermore, the system is designed to cater for a wide range of academic fields, making it suitable for various types of student projects. The system was developed using HTML, JavaScript, Cascading Style Sheet (CSS) and PHP as the front-end while MySQL Structured Query Language was used as the backend.

Key words: Automated System, Student Project, Verification, Validation, Project topic Detection.

1.0 INTRODUCTION

1.1 Background of the Study

In many tertiary institutions in the country, students seek a project in a given field of specialization as part of the upper level of their degree programmed. Usually, a project can be presented by at most one student, though in some cases a project is suitable for more than one student to work on simultaneously. To give students something of a choice, there should be wide range of available projects topics as possible, and in any case the total number of project topics should not be less than the total number of students.

A verification and validation system as in this project is an application program used to verify that two students are not working on the same or existing topic and that topic has not been work on in the department. The process of managing final year students' projects involves three parties: students, supervisors and the head of department. The head of department (sometimes represented by Project coordinator) assigns a lecturer to supervise each student.

Over time, it has been discovered that students are becoming very lazy and there is no more originality in the project carried out to qualify them for the degree awarded. From the little findings carried out, it was discovered that since students are allocated to different supervisors, a project carried out by a student in a particular year with certain supervisor could be picked up by another student in another year and replicated to another supervisor within the same department without the supervisor's knowledge. The reason for these is often attributed to the manual process which involve a paper-pen method of keeping past projects. Keeping track of such paper-pen projects by supervisors could be tasking, repetitive and tiring, there is the need to design and develop a user-friendly, easily accessible and robust system for users (basically supervisors) to ameliorate this problem.

Student Project is the discipline of planning, organizing, and managing resources to bring about the successful completion of a specific project goals and objectives. A project is a finite endeavor having a specific start and completion date, undertaken to create a unique product or service which brings about beneficial change or added value. This finite characteristic of a project stands in sharp contrast to processes, or operations, which are permanent or semi-permanent functional works to repetitively produce the same product or service. In practice, the management of these two systems is often found to be quite different, and as such requires the development of distinct technical skills and the adoption of separate management philosophy, which is the subject of this study.

In recent years, computational intelligence has been used to solve many complex problems by developing intelligent systems. And fuzzy logic has proven to be a powerful tool for decision-making systems, such as expert systems and pattern classification systems. Fuzzy set theory has already been used in some medical expert systems.

Fuzzy logic is based on the observation that people make decisions based on imprecise and non-numerical information. Fuzzy models or sets are mathematical means of representing vagueness and imprecise information (hence the term fuzzy). These models have the capability of recognizing, representing, manipulating, interpreting, and utilising data and information that are vague and lack certainty. applying fuzzy logic in student management verification and validation system will help to reduce duplication of topic.

1.2 Statement of the Problem/Justification

It has been widely recognized that manual storage of student projects has inherent problems. In most Universities and Polytechnics, students still submit hard and soft copies of projects to their various institution and departmental libraries, without a web-based storage system. The disadvantages of this method are as listed below;

1. Possibility of repeating project without detection by a project supervisor
2. Records of project carried out by a student are stored in the institution/ departmental library for a long time which occupies valuable office space.
3. Projects are prone to loss due to natural disasters such as fire outbreak, flood and theft.
4. Difficulty in searching for project already done
5. Projects cannot be accessed outside the University, that is, it has the problem of geographical barrier.
6. Backing up projects becomes a problem since more space will be employed.

Faced with the need to organize projects, this system for management of student projects is unique and totally innovative in its integrated approach. Its functionality of making project storage easier makes it a veritable tool. The system to be developed makes use of rich internet technology to replace desktop application with web application running on a remote server. The system shares the advantage of both web application and desktop application, and removes the most disadvantages of both.

1.3 The significance of this study

The work is very significant because this project work will ensure all students projects submitted are being checked against abnormal copy right and also ensure computerized documentation of projects for easy retrieval, storage, accuracy and security. This research work will offer the several advantages to the various institutional departments;

1.4 Aims and Objectives of the Study

The aim of this project is to develop an automated student project verification and validation system using fuzzy logic.

The specific objectives are:

1. to provide a system that can resolve the issue of manual verification and validation of student project and storage
2. to develop a platform that can easily confirm the authenticity of any project topic submitted by any student
3. to reduce duplication of project topics in an institution using fuzzy logic

2.0 LITERATURE REVIEW

2.1 Conceptual review

A project is a research study carried out by a student with the aim of solving an already identified problem. The word “research”

originates from the medieval French word 'recherché', meaning "to seek closely." In its most general sense, research involves investigating a topic to learn more about it. Typically, one conducts research to answer questions. Often, as one learns more about a topic, initial questions generate additional questions. Sometimes the purpose of research is simply to increase one's factual knowledge (Robin, 2010). More often, however, research involves going beyond mere fact collecting. It requires one to analyze, or interpret, the information gathered and to draw conclusions from it. A research paper thus usually includes a thesis statement that makes a claim about the topic, followed by evidence to make a persuasive argument.

Research comprises "creative work" undertaken on a systematic basis in order to increase the stock of knowledge, and the use of this stock of knowledge to devise new applications. It is used to establish or confirm facts, reaffirm the results of previous work, solve new or existing problems, support theorems or develop new theories. A research project may also be an expansion on past work in the field. The primary purposes of basic research are documentation, discovery, interpretation, or the research and development of methods and systems for the advancement of human knowledge.

A system can be defined as a network of interrelated procedures that are joined together to perform an activity or accomplish a specific objective (Jerry, A.F., 2008). A system could be classified as being open or closed. A closed system is one which automatically controls or modifies its own operation by responding to data generated by the system itself. It seldom if ever interacts with its environment to receive input or generate output (Wetherbe, 2009). An open system is one which does not provide for its own control or modification. It does not supervise itself so it needs to be supervised by people.

A management information system can be defined as the development and use of effective information systems in organization (Hatch, K., 2000). He adds on that an information system is effective if it helps to accomplish the goals of the people and the organization that use it. An Information system is an open system that seeks a set of related goals, producing information using the input-output cycle (Acoff, and Russell, 1999).

A student project management system can therefore be defined as a system that effectively manages student projects and allows for quick and easy retrieval. The student project management system should be able to effectively store student projects carried out over the years, ensure accurate and easy retrieval of projects and prevent repetition of project topics.

Student Project management is currently done manually in most tertiary institution. The steps involved in the existing system are;

- A student submits a hard copy of the project to the departmental officer in charge of projects.
- The student registers his/her name and matriculation number in the registry.
- After project defense, the student retrieves the project if any corrections were made by the external supervisor and resubmits it.
- The submitted project is then kept on a shelf in the departmental library.

2.2 Review on students' project topic allocation

In most tertiary institutions, students are required to undertake a project as part of the final stages of their degree programs, particularly in specialized fields. These projects serve as a key component of their academic journey, allowing them to apply theoretical knowledge to real-world problems and demonstrate competence in their areas of study. Typically, each project is assigned to one student, though in some cases, a project may be suitable for more than one student to work on collaboratively (Johnson, 2019). This collaboration is particularly common in fields that require interdisciplinary or large-scale projects, such as engineering, computer science, or research-based subjects.

To ensure students have ample opportunities to pursue their preferred areas of interest, it is essential to offer a wide range of project topics. The available number of projects should at least match the number of students needing placements to avoid bottlenecks in the project allocation process. A shortage of projects could leave students without suitable assignments, which may delay their graduation or force them into projects that do not align with their academic strengths or career goals (Adekunle & Olatunji, 2018).

Lecturers play a crucial role in the project allocation process, as they typically offer a range of project topics based on their areas of expertise and research interests. However, lecturers do not anticipate that all their proposed project topics will receive acceptance. Instead, students are given the freedom to express preferences for the project tooics they find acceptable and are interested in pursuing (Smith, 2020). This system helps align student interests with available projects, although it often leads to competition for popular topics or supervisors. On the other hand, lecturers also have their preferences regarding which students they are willing to supervise, often based on the students' academic performance, interest in the subject, or prior interactions (Brown & White, 2017).

Moreover, there are constraints in project allocation. A lecturer may have an upper limit on the number of students they can supervise effectively. This limitation ensures that each student receives adequate guidance and support throughout the project. Similarly, certain projects may have a cap on the number of students that can be assigned due to resource limitations or the nature of the project itself (Ng & Chan, 2016). For instance, a project involving lab work or field research might only accommodate a limited number of students due to equipment availability or supervision capacity.

Given these challenges, the allocation of student projects in tertiary institutions often requires careful planning and coordination. Institutions may use automated systems or manual methods to match students with project topics, taking into account student preferences, lecturer availability, and resource constraints. Optimizing this process is crucial for ensuring a smooth project experience and promoting student satisfaction. In this paper, we explore various methods and frameworks for efficiently allocating student projects in tertiary institutions, addressing issues such as project shortages, lecturer workload, and balancing student preferences (Ajayi & Onifade, 2021).

3.0 METHODOLOGY

3.1 Identification of the limitations of the System in use

Though the existing system of Student Project management seems effective, there are some difficulties inherent in the system. Some of these difficulties are;

- Inefficient office space management.
- Time consuming in retrieval of projects to be accessed.
- Loss of valuable projects can occur due to fire outbreak and other natural disasters.
- Projects cannot be accessed outside the Institute, that is, it has the problem of geographical barrier.
- Backing up projects becomes a problem since more space will be employed.
- Time consuming: a transaction can take up to three days or more.
- Prone to error and inconsistencies.

3.2 Method identification and selection

In development of Automated Web-Based Student Project Verification and Validation System, choosing the appropriate software development methodology is critical for structuring, planning, and controlling the system development process. The Structured Systems Analysis and Design Methodology (SSADM) due to its emphasis on a sequential and disciplined approach to system analysis, documentation, and design. The SSADM is widely recognized for its structured approach to system development, particularly in projects involving detailed requirements and documentation. It involves a sequence of analysis and design tasks that help in thoroughly understanding the system's requirements, ensuring that the system architecture is robust, and that the design aligns with the project goals. According to Avison and Fitzgerald (2006), SSADM is a well-established methodology in software development, especially in environments that demand clear documentation and a structured approach to system design. This makes SSADM an ideal choice for an Automated Web-Based Student Project Verification and Validation System, where accuracy in data handling and system validation is paramount.

3.3 Main features of web-based student's project verification and validation system

The main features of the Automated Web-Based Student's Project Verification and Validation System Include several key functionalities designed to streamline the management of students' project in tertiary Institutions, these features ensure a more

efficient and effective process for verifying and validating project topics while minimizing common issues such as topic duplications.

I. A system that provides automated project topic verification and validation, ensuring unique submission from students, thereby preserving originality in academic research and preventing redundancy.
II. Real-time progress tracking enhances communication, ensures timely feedback and helps maintain deadlines for students and supervisors in monitoring project development stages.
III. The modules offer a project submission and re-submission feature that allows students to submit, receive feedback, make corrections and re-submit their project work for final approval, thereby promoting collaboration and ensuring students meet required standards.
IV. The system uses automated validation checks to ensure all submitted projects meet institutions academic standards, thereby enhancing the quality of students' projects and improving the project management lifecycle, ensuring efficiency, transparency and academic integrity

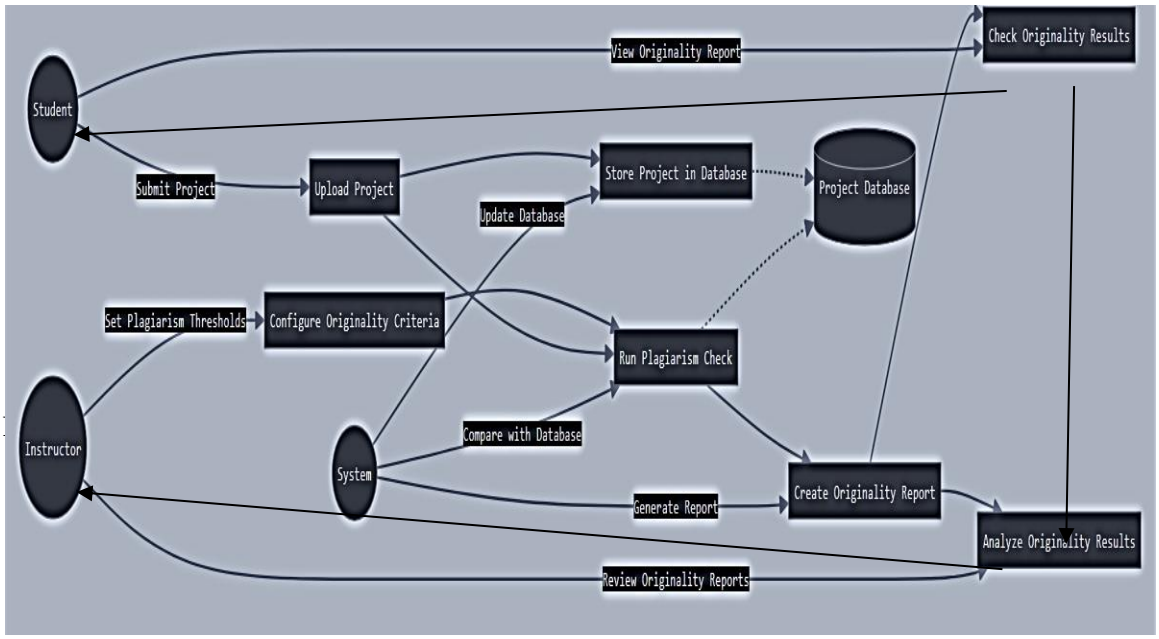
3.4 Evaluation of the advantages of Web-Based Student Project Verification and Validation System

The Automated Web-Based Student Project Verification and Validation System enhances accuracy and transparency in student project management, crucial for academic integrity and smooth workflow. It automates the process, detecting errors like duplicate topics and incomplete submissions, reducing manual effort and human errors, making project management more efficient. The benefits of utilizing a web-based system for verifying and validating student projects are numerous. Some of the benefits are;

I. **Reduction of Duplication of Project Topics**
The web-based system prevents duplicate submissions of student project topics by using automated verification methods, promoting diversity in research and ensuring each student works on a unique topic, contributing to academic growth and innovation. The student Project topic mentoring system will be able solved many of the problems inherent in duplicating of project topic.
II. **Real-time Monitoring and Reporting**
A web-based system enables supervisors and administrators to monitor project submissions and validation status in real-time, providing up-to-date information on students, validation stages, and issues, and generating reports for further analysis.
III. **Improved Data Accuracy and Integrity**
Structured validation checks, ensure accurate data entry into an institution's database, flagging common issues like missing information, incorrect formatting, or incomplete documentation, improving data quality, and reducing administrative workload.
IV. **Accessibility and Ease of Use**
The web-based system allows remote interaction between students, lecturers, and administrators, enhancing flexibility and convenience by allowing project submission, status tracking, and feedback.
V. **Enhanced Collaboration between Students and Supervisors**
The system will enhance student-supervisor collaboration by facilitating communication, feedback, and progress tracking, ensuring timely project completion and improved communication.
VI. **Cost-Effective and Environmentally Friendly**
A web-based system reduces administrative costs and paper usage by eliminating the need for physical paper work, making the process more cost-effective and contributing to environmental sustainability.

3.5 Software design techniques

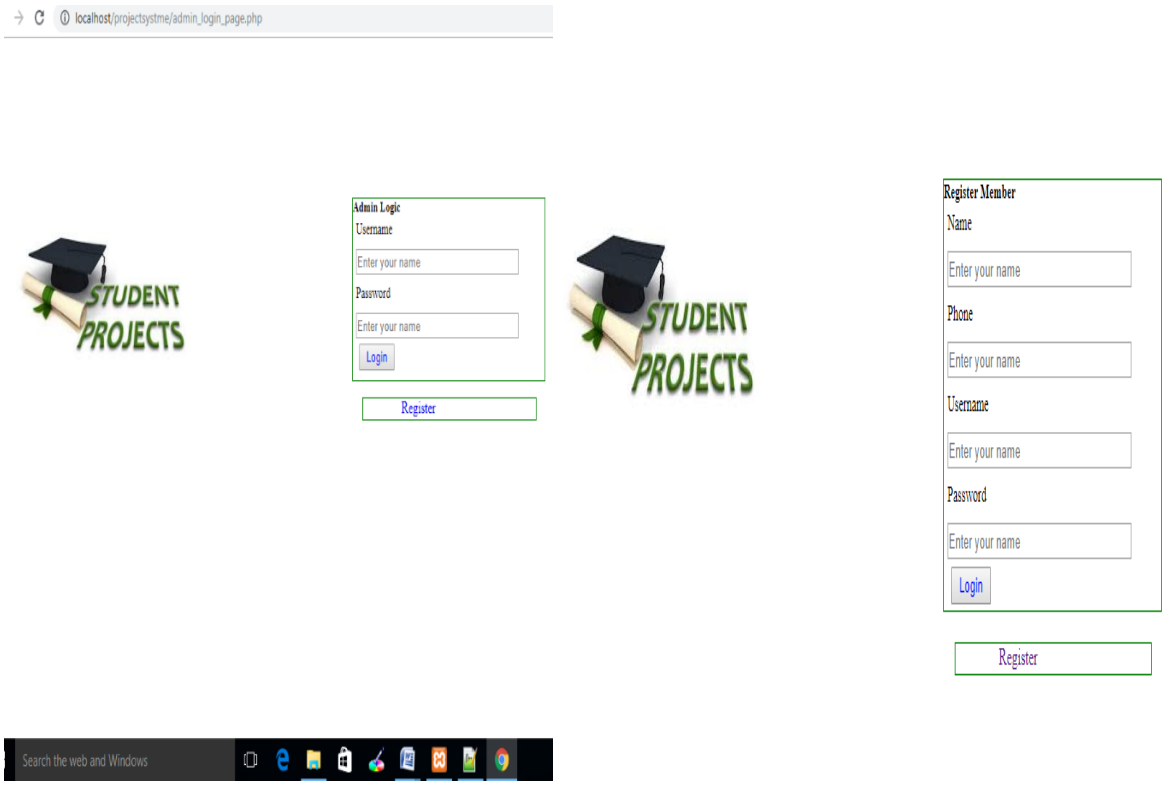
The flow diagram of the students' project management system is presented in Fig 3.1. It indicates the lines where one process ends and the next one. The user who could be anyone that wishes to use the system is verified to be an authorized user i.e. authenticating the user. The authenticated user is allowed to enter the project details which is held in a data file and could be used when queries are made to the system.



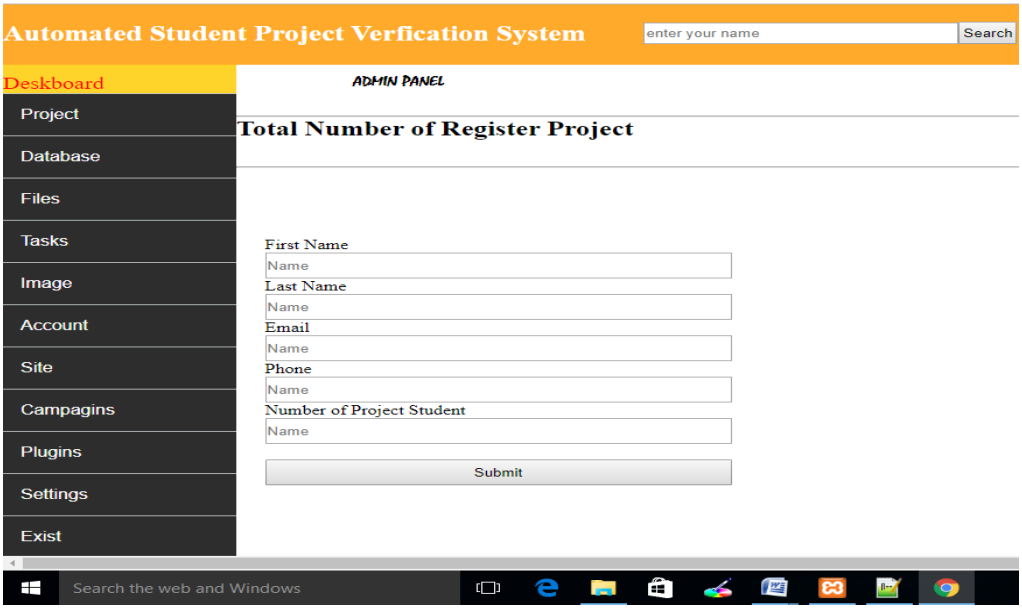
3.5.1 Input Design Specification

The input design illustrates a situation where users of the system enter data into required fields. Each transaction in the system requires input or data. These data are then processed by the system to produce the desired output of the system. For the proposed system, input is in form of a document. The input required for this system is in three Tables;

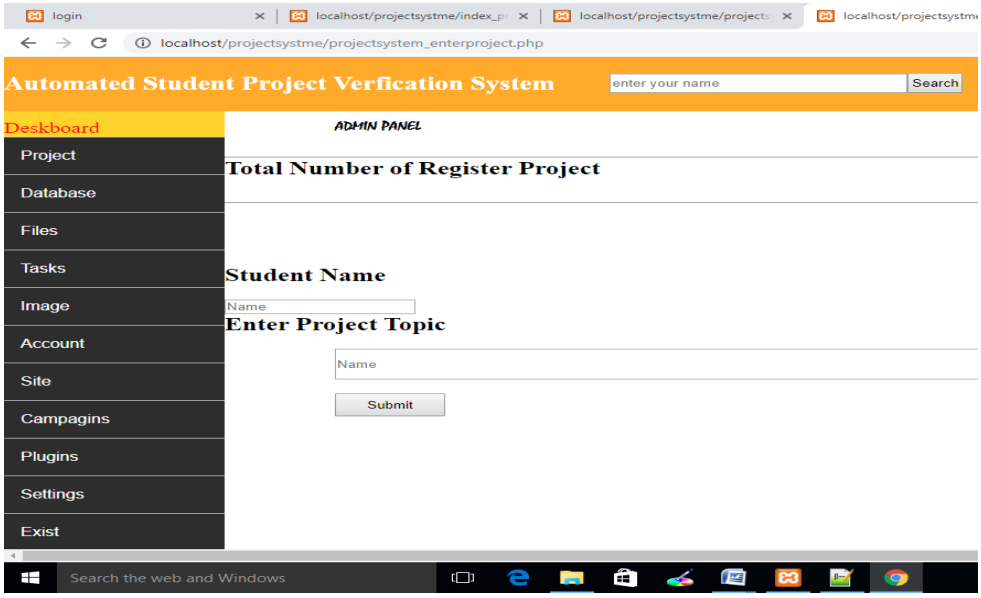
I. **Admin/student Login**: This form contains username and password for both the admin and the other users.



II. **Add Project**: this form contains the necessary fields to be entered before adding a project to the database.



III. Search Project: This form enables a user to search for a particular project topic if it is in the database or not.



4.0 CONCLUSION AND RECOMMENDATION

4.1 Conclusion

The Automated Web-Based Student Project Verification and Validation System is a crucial tool in enhancing student project management in educational institutions. It automates critical tasks, improving administrative efficiency and the educational process. The system addresses issues like topic duplication and aligns student interests with specialized supervisors, demonstrating its ability to address inefficiencies in traditional project management workflows.

4.2 Recommendations

Educational institutions should adopt an Automated Web-Based System for student project verification and validation. This system addresses issues like duplication of project topics and information, enhancing efficiency. It will improve collaboration between students and supervisors, automates project tracking and validation tasks, and maintains a well-

organized database of projects, ensuring originality and proper supervision.

Future work should include integrating advanced data analytics to monitor project progress, incorporating artificial intelligence algorithms for better topic suggestions, and optimizing supervisor matching. Mobile-friendly versions could also be developed for easy access for students and supervisors. Institutions could also explore linking the system with other academic management tools to create a comprehensive platform for student work and evaluation.

REFERENCE

Acoff, and Russell, and Manlove D.F. (1999) Two algorithms for the student- project allocation problem. Journal of Discrete Algorithms 5(1): pp. 73-90.

Adekunle, J., & Olatunji, K. (2018). *Managing project allocations in Nigerian tertiary institutions: A case study of universities*. Journal of Educational Management, 25(3), 217-229.

Ajayi, M., & Onifade, O. (2021). *Optimizing student project allocations using an automated matching system*. International Journal of Education and Research, 42(1), 33-48.

Avison, D., & Fitzgerald, G. (2006). Information Systems Development: Methodologies, Techniques and Tools (4th ed.). McGraw-Hill Education.

Brown, H., & White, T. (2017). *Lecturer-student dynamics in project supervision: Balancing preferences and constraints*. Higher Education Review, 15(2), 134-150.

Hatch, K, R., George, Y. and Ronald, W. (2010). Students' verification system for Online Assessments: Botstering Quality and integrity of Distance Learning. Journal of Industrial Technology. Volume 27 Number 3. P1-8. Uzoka. (1998). Human Resources Management an unpublished M. Tech Thesis, federal University of Technology, Akure, Ondo State.

Jerry, F (2015). Algorithmics of two-sided matching problems. Master's thesis, University of Glasgow, Department of Computing Science.

Johnson, P. (2019). *Collaborative projects in higher education: Enhancing interdisciplinary learning*. Journal of Applied Learning, 12(4), 99-115.

Ng, W., & Chan, T. (2016). *Supervisory capacity and project distribution in tertiary institutions: An analysis of workload management*. Asian Journal of Educational Leadership, 9(3), 56-72.

Robin and G. O'Malley. (2010) Student project allocation with preferences over projects. In Proceedings of ACID2005: the 1stAlgorithms and Complexity in Durham workshop, volume 4 of Texts in algorithmics, pages 69- 80. KCL Publications.

Smith, A. (2020). *The role of student preferences in project allocations: A case study in a UK university*. Journal of Academic Leadership, 28(2), 45-57.

Wether be. Moussa and Ahmed H. Abu El-Atta, (2009) "Student Project Allocation with Preference Lists over (Student, Project) Pairs", The 2nd International Conference on Computer and Electrical Engineering (ICCEE 2009), Dubai,

1D SOIL ELECTRICAL RESISTIVITY SURVEY, TOMOGRAPHY AND THEIR OUTCOME ON GROUNDWATER IN YENAGOA

Eniye Mienye
Department of Electrical/Electronics Engineering,
Bayelsa State Polytechnic, Aleibiri, Nigeria.
mieyeen1@gmail.com 08032356775

Abstract:
Electrical resistivity survey is widely applied in many areas of environmental studies. This method was used in this study. In the first place, data to be utilized were acquired using schlumberger and wenner array for the 1D and 2 D tomography data respectively. All necessary precautions were observed before carrying out the field work. Some persons were employed in performing the work. The data obtained were subsequently interpreted using ipi2win, interpex and res2div softwares. For the ves data interpretation, curves were established from which the various lithologies were interpreted while the 2 D tomography data established a pictorial view of the subsurface in both horizontal and vertical direction. From the data sets, it was observed that the soils behave differently for different soils even within the same soils because of composition and nature. These trends of event have the capacity to depict depth patterns of different soils and consequent pattern of groundwater depth. From the resistivity survey, it is possible to detect areas of good quality water so that there would be no random drilling because there is already information about the ground before drilling.

1.0 Introduction:

Soil resistivity is a measure of soil's capacity to expose, resist and reduce the flow of electric current through the earth. It is a diagnostic tool used in detecting conductive or resistive layer and bodies in the subsurface.

Measurements of soil electrical resistivity have been used to predict various soil parameters namely porosity, degree of saturation, water content, degree of soil compaction, liquefaction potential and others (Lech et al, 2020)

The importance of soil electrical resistivity cannot be overemphasized. For instance, soil electrical resistivity has proven useful for detecting several graves for archaeological interest, unmasked cemetery graves (Eiiwood,1990) and clandestine graves containing the remains of under murdered victims (Cheethan , 2005).

Electrical resistivity is a viable tool for locating and mapping sand and gravel deposits (okiongbo 2019).

Soil electrical resistivity measurements provide data for the design and performance of electrical grounding system. Periodic investigation of soil resistivity is important aspect of having information on electrical grounding system. Soil electrical resistivity survey was adopted to overcome issues of interfering with overcurrent protection system which could be as a result of higher resistivity in the ground. The study of the relationship of resistivity with soil moisture content on itself cannot proffer solution to the problem of electrical grounding system but provides strategic steps towards curbing the situation. Soil electrical resistivity is an important aspect of electrical grounding system. It is considered to vary not only with chemical composition of the soil but also with soil moisture content and temperature. (Vilson et al, 2014).

Correlation of electrical resistivity and sand water content has proven to be useful in the study of setting up engineering structures. The moisture content in the sand is expected to cause damage to any engineering structure. Soil water content has impact on the engineering behaviour of soils. Knowledge of geotechnical characterization is important and geophysical methods are reckoned as attractive tools for such jobs. (Sudhir et al, 2014)

Soil electrical resistivity has been considered effective approach in road construction such as in earthwork, embankment and other constructions like dams on the surface of the earth. This is related to the idea behind non-cohesive soil and compacted one. These ideas of soils are pointing important information as regard risk factor in hydraulic piping or tunnels (Sebastan et al, 2014)

Soil electrical resistivity survey has been adopted to investigate soil organic content. Electrical resistivity survey is important as bulk density and water storage capacity are

controlled by fertilization and plant growth (Ulrike et al, 2009).

Electrical resistivity is also used in monitoring gravimetric soil moisture content of the superficial surface of the earth, mostly due to the high sensitivity of the inversion results at these surfaces using time lapse 2D electrical resistivity survey.

Investigative results of electrical resistivity tomography and those of soil analysis were used to define the characteristics and distribution of soil moisture content at shallow depth. Emphasis on the importance of soil selection for maximum yield through the approach of electrical resistivity tomography and soil analysis was highlighted (Sanmi et al, 2021)

The aim of this study is to carry out soil electrical resistivity survey and its results on groundwater. The study attempts to probe the different soils underneath the surface of the earth and highlight their activities and outcome on groundwater.

1.1 Statement of problem:

The major problem in the study area is iron concentration in groundwater while other geochemical parameters had been considered to be within acceptable as confirmed by previous studies in the area.

1.2 Objectives:

1. To acquire ves and 2 D tomography data in parts of Yenagoa.
2. To determine stratigraphy in parts of Yenagoa.
3. To establish the outcome on ground water

1.3 Location and Geological Setting of The Study Area

The study area is bounded by latitudes 04°38.2' and 04°23.3' north of the equator and longitude 006°05' and 006°25' east of the prime meridian. The area falls within the coastal plain area of the recent Niger Delta. There are numerous creeks and rivers which are traversing one another namely: Epie creek, Ikoli River and Nun River etc. Atlantic is their point of discharge by means of some network. The area is characterized by even topography but slightly undulating in some areas. It has a range of elevation of 6meters to 10meters above sea level. It is found within the rainforest region and has seasonal rainfall of wet and dry season. The wet season covers a period from April to October with a very brief dry period interval in August. The dry season has a duration of four months from November to March. Range of temperatures is between 25°C and 32°C. Mean annual rainfall is about 300mm of which 85% drops in the wet season and it is the major source of supply of groundwater in the area. Harmattan winds are experienced in the dry season while southern winds are experienced in the wet season. The harmattan winds come with dust.

The geology of the Niger Delta is made up of different kinds of Quanternary deposits on thick tertiary sandy and clayey deltaic deposits. Three lithologies were defined in the Niger Delta from top to bottom as Akata, Agbada and Benin form (Okiongbo, 2015).

It was found out from detailed studies of the Quaternary deposits of the Niger Delta that sediments in the region were deposited with the impact of fluctuating Pleistocene eustaic sea levels (Okiongbo2015).

Benin formation has been noted to be significant freshwater-bearing aquifer in the study area. The groundwater in the study area has been captured under unconfined aquifer. 2100m has been identified as the thickness of the coastal plain sand sediments (Okiongbo, 2015)

2.0 MATERIALS AND METHODS

2.1 Location and Geological Setting of The Study Area

The study area is bounded by latitudes 04°38.2' and 04°23.3' North of the equator and longitude 006°05' and 006°25' East of the prime meridian. The area falls within the coastal plain area of the recent Niger Delta. There are numerous creeks and rivers which are traversing one another namely: Epie creek, Ikoli River and Nun River etc. Atlantic is their point of discharge by means of some network. The area is characterized by even topography but slightly undulating in some areas. It has an elevation range between 6meters and 10meters above sea level. It is found within the rainforest region and has seasonal rainfall of wet and dry season. The wet season covers a period from April to October with a very brief dry period interval in August. The dry season has a duration of four months from November to March. Range of temperatures is between 25°C and 32°C. Mean annual rainfall is about 300mm of which 85% drops in the wet season and it is the major source of supply of

groundwater in the area. Harmattan winds are experienced in the dry season while southern winds are experienced in the wet season. The harmattan winds come with dust.

The geology of the Niger Delta is made up of different kinds of Quanternary deposits on thick tertiary sandy and clayey deltaic deposits. Three lithologies were defined in the Niger Delta from top to bottom as Akata, Agbada and Benin form (Okiongbo, 2015).

It was found out from detailed studies of the Quaternary deposits of the Niger Delta that sediments in the region were deposited with the impact of fluctuating Pleistocene eustaic sea levels according to (Okiongbo2015).

Benin formation has been noted to be significant freshwater-bearing aquifer in the study area. The groundwater in the study area has been captured under unconfined aquifer. 2100m has been identified as the thickness of the coastal plain sand sediments according to (Okiongbo, 2015)

2.2 Materials

A resistivity meter called Hero jat was used to acquire data for the study. Four stainless steel electrodes were used made up of two potential electrodes and two current electrodes. There were four sets of multi-conductor electrode cables wound on reels as there were four electrodes. The equipment has two connections for current electrodes namely c1 and c2. There were also connections of p1 and p2 for the potential electrodes. Measuring tapes and global positioning systems were also provided for the distances and position of each measuring station. Six persons were employed for the project. Four persons were meant for the four electrodes with hammers each to properly plant the electrodes into the ground for each measurement. The equipment has the advantage of inbuilt battery to power it unlike others where one has to carry along battery. Apart from displaying the resistance values, it also shows the level of errors or accuracy. The equipment was adequately charged before using it in order not interfere negatively with the readings of the measuring points. Prior to actual field measurement, a design of the survey was made in order to serve in a way of guarding the measurement process.

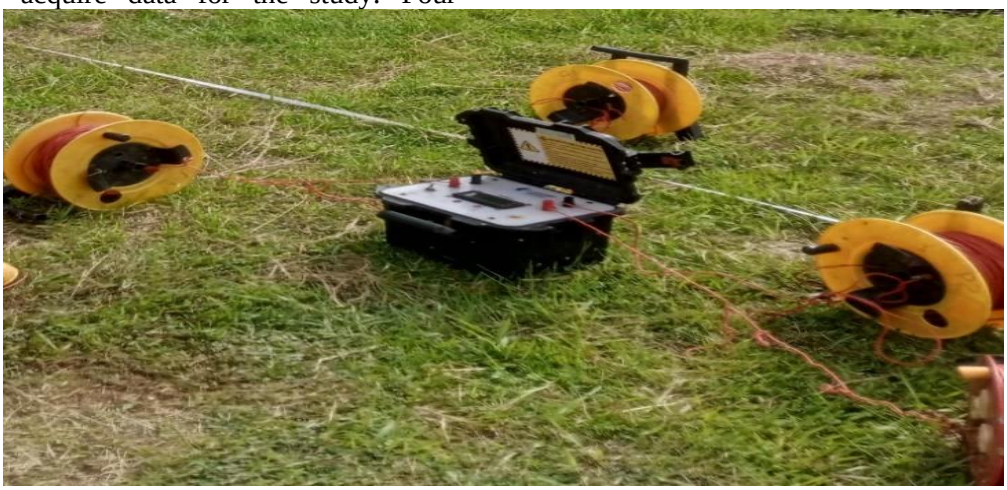


Fig 2.1:: hero jat and reels of wires during the field study

The equipment was carefully removed from its casing at every measurement set up. Electrodes and cables carefully connected to their respective places on the equipment. Cables were carefully laid out on ground so that they do not tangle or twist in the process of dragging them. Trouble shooting measures were carried out in the field to check whether the cables are in the order. For 1D resistivity survey, Schlumberger array was used. The 2-D imaging was done manually by using Wenner configuration. Prior to the field measurement, a design of the 2-D survey plan was made for each of the stations. In this project, the movement of each measurement was five metres for n=1 up to n=6. Each profile length was 100 metres.

Data processing was based on computer software. First, resistance values obtained in the field were converted to apparent resistivities by means of a geometric factor.

The resistivity was calculated with $p_a=kR$. The resistivity values and other parameters were inputted into the computer. The computer automatically carried out inversion processes by means of analyzing the observed model

with that of the reference model iteratively until the residual was considered to be within acceptable limit. Final values of resistivities of the computer inversion processes are true resistivities which are a function of depth. That is, true resistivity gives resistivity of each soil.

3.0 RESULT AND DISCUSSION

The movement of current injected into the ground determines the relative values of resistivities because of the diverse nature of the subsurface. The nature of the topsoil is presented in fig2.1 It shows that the top soil is made up of sandy material and going down the soil material becomes coarser; this is evident from borehole information around the surveyed areas. The hydraulic conductivity of this type of soil is expected to be high compared to that of clay. In furthermore, the too soil is more porous and the surface runoff water also quickly dries off after rainfall. The groundwater potential is also expected to be high and the water table is close to the surface. It is not only in vertical direction that the resistivity values are changing but also in the horizontal direction along the line of profile. The pattern of porosity and permeability will also change as seen from the soils resistivity values. At the start of the profile, the values of resistivities are low and this could be due to some moisture content compared to what is obtainable at a distance from 20m to 40m where the resistivity values are a bit higher which could be as a result of drier particles. The topography at this range of distance is a bit higher than where the profile is started. At the extreme end of the profile, the resistivity values become lower and this could be due to water content as there is surface water running perpendicular to the profile direction.

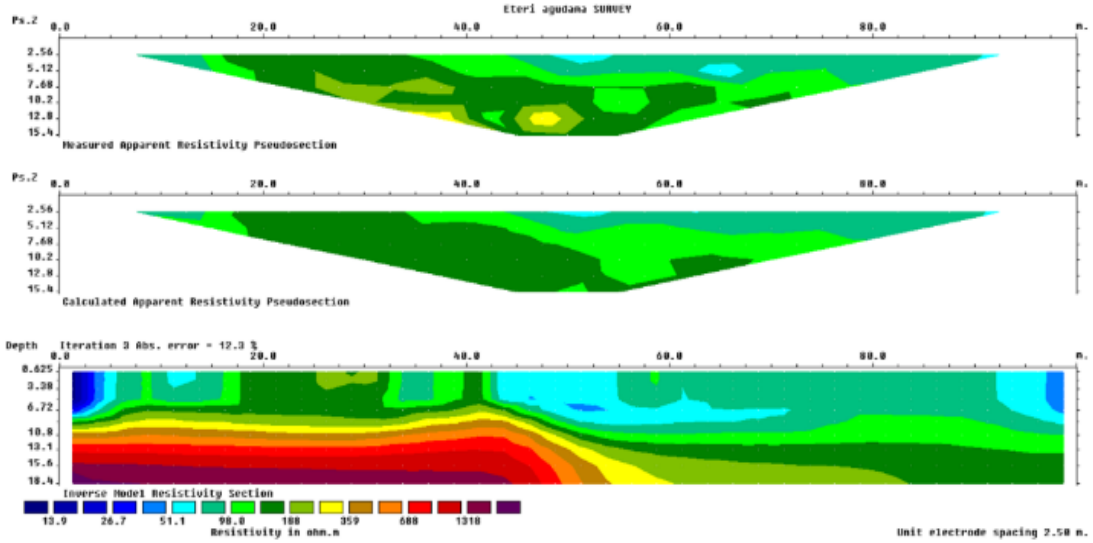


Fig 2.1: Tomography of soil structure in Agudama-Epie

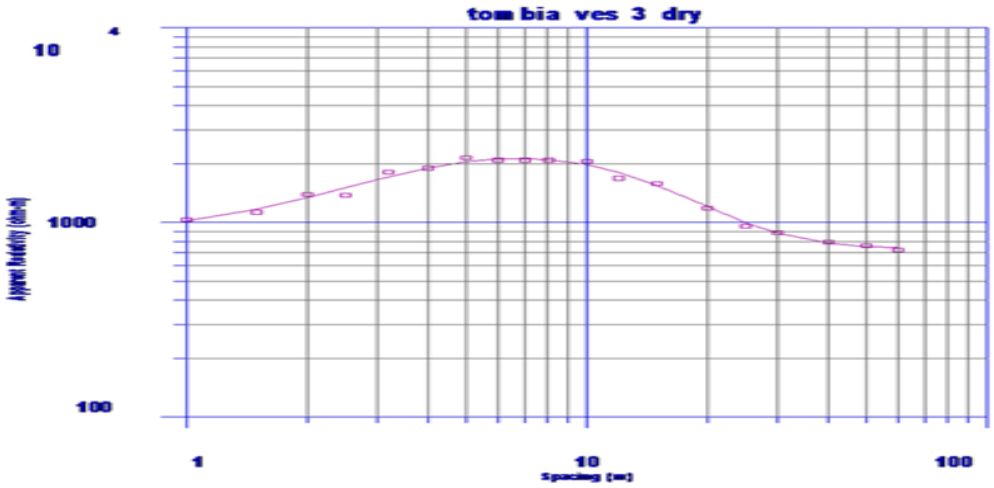


Fig 2.2: VES graph of soil structure in Tombia.

Table 2.1Tombia ves 3

Resistivity	thickness	Depth	Error
894.32	0.88087	0.88087	4.4253
3445.3	2.1579	3.0388	
2101.3	3.5517	6.5905	
612.94	7.1995	13.790	
712.63			

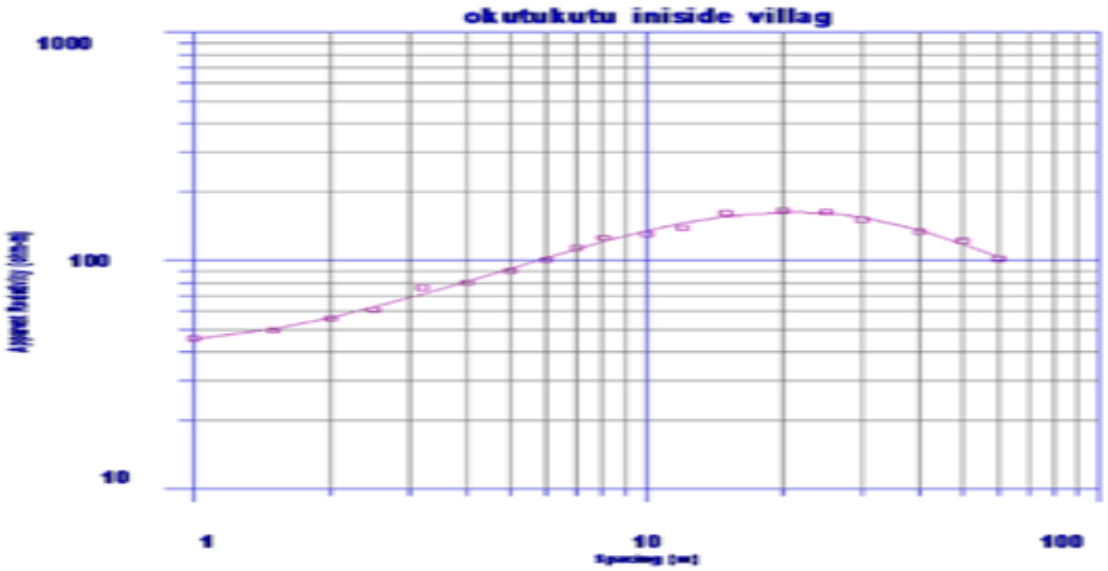


Fig 2.3: VES graph of soil structure in Okutukutu.

Table 2.2: Okutukutu village

Resistivity	Thickness	Depth	error
49.30	0.52416	0.52416	3.2014
48.84	0.71605	1.2402	
162.75	1.6348	2.8750	
197.63	7.3672	10.242	
156.50			

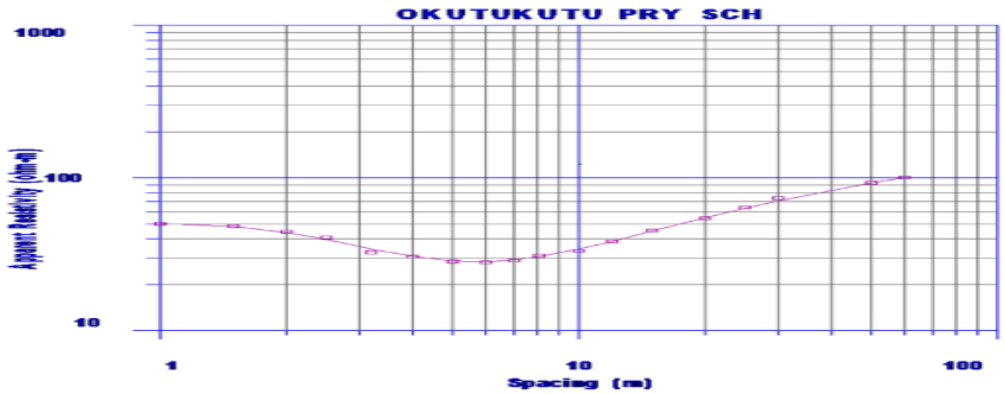


Fig 2.4: VES graph of soil structure in Okutukutu primary school.

Table 2.3: OKUTUKUTU PRIMARY SCHOOL

Resistivity	thickness	Depth	error
45.522	0.37904	0.37904	1.9210
64.510	0.68945	1.0685	
21.149	5.0024	6.0709	
149.55			

From fig2.3, the soil resistivity values are very high which could be indicative of absence of clay in the topsoil. This kind of soil which is sandy in nature is more porous and the depth to, the aquiferous layer is a bit closer to the surface of the earth. At about 2.5 to 3m depth, resistivity values begin to decrease which could be clayey sand. The soil condition of fig2.3 and fig2.4_ might not be the same as seen because at the start of the profile of fig2. 4, the resistivity values are different from those of fig2.3 in which case clay might be ruled out. However, the two types of environments are expected to produce similar kind of water.

In a situation where the aquiferous can be taken to be third layer is far from the surface it is overlain by clay layer. In other words, the watertable is bit far away from the surface of the earth. The resistivity of the topsoil is less than 100Ωm. The subsurface is highly complex.

Type of soil is a great determinant of the resistivity values that can be obtained in any resistivity survey. Characteristics of different soil types have resultant effect on the features of groundwater ranging from depth to water quality. From analysis of the results, the water table also behaves differently in different soils. Clay dominated topsoil has a water table different from that of sand dominated topsoil. It is noted that the clayey soil is less permeable than the sandy soil which is more than the former. This activity may have results on the depth situation of the groundwater. In the case of sand dominated topsoil, it is easy for the soil to be saturated with water close to the surface. On the contrary, for clay dominated topsoil the depth has to increase to get to the sandy soil. The sand dominated topsoil are more of better quality in terms of iron, therefore, stratigraphic information is key in the process of drilling so that the depth would not exceed the area of better quality of groundwater. The best quality of groundwater can be traced with the aid of the ves and tomography data.

4.0 CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion:

Resistivity values are being influenced by the nature of the soil particles. There are inconsistences in the behaviour of soil particles and even within a given stratigraphic units, the soil particles vary due to composition and nature of the soils. The changes of the soil particles take place up to the groundwater and beyond. In essence, the subsurface is highly complex. From the results of this study, the behaviour of the soils have an impact of the depth situation and the nature of groundwater. The ves curves showed that the depth of penetration of the groundwater was different for different types of soil. The 1D resistivity survey and 2D tomography data have the capacity to trace the area of likely possibility of good groundwater. In essence, such information ensures that the areas of high concentration can be detected as well as areas of low concentration.

4.2 Recommendations.

Based on the results of the study, it is recommended that the Bayelsa State government should sponsor research on the soil structure and composition within Yenagoa metropolis with view to creating a data bank that can be consulted by prospective borehole drillers in the state.

REFERENCE

Cheathan.p., (2005). forensic geophysical survey, In: Hunter.j., cox.M (Eds) Forensic Archeology: Advances in Theory and Practice. Routledge. Oxon, ISBN: 0415273129 pp.62-95.

Ellwood, B.B., (1990). Electrical Resistivity Survey in two historical cemeteries in northeast Texa; a method for delineating unidentified burial shafts, Hist. Archaeol. 24 (0440-9213) 91-98.

Lech Marius, Zdzislaw Skutnik, Marek Bajda and Katarzyne Markowska-lech, (2020). Application of Electrical Resistivity Survey in Solving Selected Geotechnical and Environmental problems, Applied Science, 2020, 10,2263.

Okiongbo K.S., Akpofure E., (2015). Hydrogeophysical Characterization of Shallow Unconsolidated Alluvial Aquifer in Yenagoa and Environs, Southern Nigeria, Arab.J.Sc.Eng.,Doi 10.1007/s13369-015-1827-2.

Okiongbo K.S., Akpofure E., Amakiri A.R.C., (2019) Spatial variability of Soil Resistivity for Assessing Corrosion Risk and intensity in the Niger Delta, International Journal of Applied Environmental Science, ISSN: 0973-6077 Volume 14, Number 1 (2019) pp. 37-51

Sanmi Tokunbo Fugbemigun, Rasidat Ajibola Oyebamiji, Idowu Jane Amosun, Adetola Oluseun Sanuada, (2021). Integration of Electrical Resistivity and Soil Analysis for Agricultural Soil Characterization- a Case Study, Arabian Journal of Geosciences (2021) 14:377.

Sebastian Kowalozyk, Mariej Maslakowski, Piotr Tucholka, (2014). Determination of the correlation between the electrical resistivity of non-cohesive soils and the degree of compaction, Journal of Applied Geophysics, 110 (2014), 43-50.

.Sudhir Bhatt, Pradeep K. Jain, (2014). Correlation between Electrical Resistivity and Water Content of Sand- a Statistical Approach, American International Journal of Research in Science, Technology, Engineering and Mathematics, 6(2) pp. 115-121.

Ulrike Werban, Katrin Kuka, Ines Merbach, (2018). Correlation of Electrical Conductivity and Soil Parameters at a Long-Term Fertilization experiment, Near Surface Geophysics 2009, 5-14.

Vilson Luiz Coelha, Alexandre Piantini, Hugo A.D. Almaguer, Rafael A. Coelbo, Wallace do C. Boaventura, Jose Osvaldo S. Paulinus, (2015). The Influence of Seasonal Soil Moisture on the Behavour of Soil Resistivity and Power Distribution Grounding Systems, Electric Power Systems Research, 118 (2015) 76-82.

OPTIMIZING CORPS MEMBERS POSTING BASED ON AREA SPECIALIZATION THROUGH WEB-BASED SYSTEM

[1]Assor Dalton Emmanuel & [2]Kilakime Warikaramu-Ere Bridget
[1]Department of Computer Science, Bayelsa State Polytechnic, Aleibiri
Email: kingassor@gmail.com
[2]Department of Computer Engineering, Bayelsa State Polytechnic, Aleibiri
Email: bunafri@gmail.com

Abstract
One of the most common challenge militating against the objective of the NYSC scheme is the inappropriate matching of corps members to roles that do not align with their educational background. However, one of the most significant benefits of deploying corps members based on their specialization is the improvement in service delivery. The main thrust of this paper is to highlight the benefits of optimizing National Youth Corps Service (NYSC) posting system via web- based system where corps members posting is aligned with their specialization. The conventional posting method which is basically manual, has a number of constraints. The constraints identified by this paper includes; skills not being adequately mapped to placements, incorrect posting by the administrators, and inefficient posting systems and policies. The optimized posting system being advanced by this paper is an online system for assigning corps members to places of their specialty. This system uses technology to ensure that the corps members are allocated in places that relate to their education qualifications and professions, as well as their areas of zones they would prefer. Additionally, by integrating related job sectors and the online database of corps members' information, the system is also able to facilitate better allocation of human resources to sectors with shortages such as education, health or infrastructure building. Moreover, employing the web-based approach that promotes transparency limits the level of bureaucratic bottlenecks and delays and allows effective and efficient up-dating and monitoring of processes as it relates to placement. This work examines the importance of such a system as a way of enhancing the efficacy and efficiency of the NYSC.

Keywords: National Youth Service Corps, Specialization, Web-Based System, Posting.

1.0 INTRODUCTION

The National Youth Service Corps (NYSC) program, established in 1973 by the Nigerian government, was initially conceived as a nation-building initiative aimed at healing the wounds of the Nigerian Civil War (1967-1970). The war, which was fought between the Nigerian government and the secessionist state of Biafra, left deep political, ethnic, and social divisions across the country. Aftestate war, Nigeria government created the NYSC as an initiative and strategic healing and cooperation tool to foster national unity and reconciliation. This was aimed bringing young Nigerian graduates from different ethnic, religious, and cultural backgrounds together and deploy them to regions outside their place of origin or education. This integration effort was intended to break down regional and ethnic prejudices, promote cross-cultural understanding, and encourage a sense of shared national identity.

The NYSC program is compulsory for all Nigerian graduates, including those who completed their studies abroad, provided they are under the age of 30. Participation in the program is a prerequisite for employment in Nigeria, particularly within the public sector. This requirement ensures that all graduates contribute to national development, regardless of their career ambitions. The program emphasizes the idea that young Nigerians should give back to the country and participate in national service before advancing in their personal careers.

NYSC is mandatory for all Nigerian graduates, irrespective of where they completed their undergraduate program and as long as they are below the age of 30. Engagement in the program is a condition of employment in Nigeria, especially in state government. This requirement justifies that every graduate develops to be a part of national development irrespective of his career inclination. It is a programme that is built on the philosophy of young Nigerians giving back to their country and doing something for the common good of all. The NYSC promotes mobility and exposure to different parts of the

country by making deployment to states outside their region of origin a compulsory requirement for corps members (Obadare, 2010), to contribute to the improvement of nation-building.

Community service is another factor that NYSC cannot overlook. In most cases, that is a means through which corps members participates in Community Development Service (CDS) to initiate and implement small projects that they want to help the communities they worked with. Such activities may include, health care campaigns, construction of a community house, or social campaign on issues like WASH, women Empowerment, and environmental awareness. Members of the corps actively participate in several activities which are aimed at addressing some of the socio-economic challenges facing the host communities even after the period of their service year has been exhausted (Ojo, 2020).

According to Oke & Lawal (2013), the necessary practical work experience in some premium fields that these corps members are posted to during the skill acquisition phase enables corps members to enhance their marketability and competitiveness. This experience is usually the first concept that many graduates encounter where professionalism and knowledge bring more benefits, which are applicable to work environments, whether it's in teaching, public health, agriculture, and so forth.

However, In recent years, the NYSC program has faced criticism on account of corruption, inefficiency, and logistical challenges. Issues such as delayed postings, inadequate accommodation for corps members, and reports of favoritism in deployment are common in recent times. Despite these challenges, the program remains a cornerstone of national service and youth development in Nigeria.

Efforts to reform and modernize the NYSC, including the introduction of technology to streamline the posting process and improve transparency, are ongoing (Nwachukwu, 2019). The NYSC continues to evolve as an important tool for addressing national development challenges and remains a vital part of Nigeria's nation-building strategy. The paper is aimed at optimization of NYSC posting based on discipline of study and profession through the application of web-based systems organizational management.

2.0 LITERATURE REVIEW

2.1 The Concept of Web-based System

Web-based systems are software applications that operate on a web server and are accessed via a web browser. These systems are built to help many aspects of an organization, including Human Resource Management (HRM), Customer Relationship Management, (CRM), project tracking and so on (Zhou & Li, 2012). This saves organizations time, manpower and provides instant access to information from any location in the world as long as there is Internet connectivity. Web-based systems, particularly in the context of HRM, offer significant potential for improving organizational efficiency and effectiveness. As technology continues to evolve, these systems are likely to become even more sophisticated, incorporating artificial intelligence and machine learning to provide more personalized and predictive High Resolution (HR) solutions (Strohmeier & Piazza, 2015).

The client, which is often a web browser, the web server, and the database server make up the three primary parts of the architecture of web-based systems (Laudon & Laudon, 2020). This structure offers a user-friendly interface that can be accessed by common web technologies, facilitating effective data processing and storage.

On the other hand, web-based systems offer a very improved method over what used to be in proficient practice for human resource management (HRM). A category of these systems, referred to as e-HRM or HRIS (Human Resource Information Systems) can be applied for the automation of recruitment, employee data management, performance appraisals and resource allocation (Bondarouk et al. 2017). The adoption of web-based HRM systems has been initiated based on the necessity that organizations take more effective measures to manage their workforce in a constantly changing and globalizing climate (Marler & Fisher, 2013).

Web-based HRM systems streamline bundling data, lowering costs for processing the administration work and they can improve decision-making through data analytics (Kavanagh et al., 2015). However, a web service may serve as middleware to matched

job applicant with role based on the his/her qualification & skills, which will reduce human effort of manual processing. This will not only speed up the recruitment process but also helps in identifying the most suitable candidates for each position (Holm, 2012).

2.2 Review of the Challenges of the conventional Posting system

The current NYSC posting system is bedeviled with several challenges, especially when corps members are assigned without considering their areas of specialization/course of study. These challenges include:

I. **Mismatch Between Skills and Assignments**:
One of the most common issues is the inappropriate matching of corps members to roles that do not align with their educational background. For instance, a medical graduate may be assigned to a teaching position in a school, or an engineering graduate may be posted to a public relations department. This mismatch leads to underutilization of skills and contributes to the inefficiency of service delivery in the affected sectors (Adeyemo, 2015).

II. **Frustration and Low Morale Among Corps Members**:
When corps members are posted to areas that do not align with their specialization, it often results to low morale and frustration. They may feel that their skills are being wasted, leading to a lack of motivation to perform well in their assigned roles (Ogunyemi & Ekanade, 2011). This dissatisfaction can reduce their willingness to contribute meaningfully to their host communities or organization of their primary assignment.

III. **Poor Service Delivery**:
The absence of specialization in the posting process negatively affects the quality of service delivered by corps members. For instance, unqualified personnel may be placed in critical sectors such as healthcare or education, where specialized knowledge is required. This misplacement can result to poor outcomes, such as inadequate healthcare services or ineffective teaching, which further aggravates existing challenges in underserved communities (Ajayi, 2017).

IV. **Inefficient Use of Human Resources**:
The manual and semi-automated processes currently used in the NYSC posting system often result to delays and inefficiencies. The lack of a streamlined, web-based approach prevents the optimal use of corps members' talents and leads to administrative bottlenecks. Without a system that leverages specialization, it becomes more difficult to ensure that each corps member is deployed in a way that maximizes their potential and benefits the receiving organization.

2.3 The Importance of matching area of primary assignment with Corps Member's Specialization.

In the context of the National Youth Service Corps (NYSC, 1973), specialization refers to the specific field of expertise that a corps member has acquired through formal education or professional experience. This can range from medical sciences, engineering, education, agriculture, law, to business management, among others. Properly matching corps members to roles that align with their specialization is crucial for maximizing the effectiveness and efficiency of the program. Specialization ensures that corps members are deployed to places of primary assignment where they can apply their knowledge and skills to make meaningful contributions to national development (Ajayi, 2017).

I. **Improved Service Delivery**

One of the most significant benefits of deploying corps members based on their specialization is the improvement in service delivery, particularly in sectors such as **education, healthcare, and infrastructure development**. For example, a medical graduate posted to a hospital or health clinic can effectively apply their knowledge and skills to provide better healthcare services, especially in rural areas with limited access to medical professionals (Adeyemi & Ekundayo, 2010). Similarly, an engineering graduate posted to an infrastructure development project can contribute to building or maintaining essential facilities, ensuring higher-quality outputs that reflect their professional training.

In contrast, when corps members are posted to roles unrelated to their expertise, the mismatch can lead to **inefficient service delivery** and wasted resources. For instance, an engineering graduate assigned to teach in a secondary school may lack the necessary pedagogical skills and experience, resulting to poor educational outcomes. Aligning corps members with their areas of specialization addresses these mismatches and ensures that communities receive the best possible services in critical sectors.

II. Enhanced Professional Development

Specialization in postings corps members will offer the opportunity to develop professionally by gaining practical experience in their respective fields of study. The compulsory one year of NYSC will often serve as the first professional engagement internship for young graduates thereby providing a valuable platform to acquire hands-on skills, build networks, and prepare for their future careers (Ogunyemi & Ekanade, 2011). For instance, a law graduate posted to a legal department, law firm, or court system will gain real-world experience in legal procedures, enhancing their competence and employability after the service year.

Moreover, by being posted in roles that align with their qualifications, corps members can build professional portfolios, which will be beneficial for their career progression. This ensures that their year of service is not only a contribution to national development but also a stepping stone for personal career growth.

III. Optimal Use of Human Resources

The Nigerian economy, as with any other developing country, suffers from underutilization of human resources. This includes corps members serving where they have the least impact, causing wastage of skill and knowledge and specialization: This will gear the potential of young graduates to feel recognized by focusing on their specialization with the assurance that they will be placed in a role where such skills are needed. It will promote efficiency and productivity if corps members are allowed to do more for themselves in their host organizations and communities (Ogunyemi & Ekanade, 2011).

Specialized postings can also help plug skill gaps in key sectors. For example, rural areas often lack healthcare providers, engineers, and teachers. The deployment of corps members with the required skills in these areas will, among other things, help to tackle the uneven distribution of resources, avail requisite human resources for some parts of the country, and promote fairness in development across Nigeria (Ajayi, 2017).

IV. Increased Job Satisfaction and Morale

Specialization plays a big role in enhancing corps member satisfaction and motivation towards the deployment skill and competence. Using their theoretical/practical knowledge in an appropriate setting increases levels of job satisfaction as they feel more confident and resourceful (Oke & Lawal, 2013). On the other hand, when corps members are placed in roles that they are not cut out for, it typically results to a sense of powerlessness and apathy, as these feel both their experiences and abilities have been diminished.

A high morale among corps members is important not only for the individuals but also for the NYSC program and the communities they serve. Adeyemi & Ekundayo (2010) suggest that when corps members are motivated, the tendency is high for them to contribute meaningfully to addressing development issues by collaborating and making a lasting impact throughout their national service year.

V. Improved National Development

Specialization in NYSC postings has a holistic effect on our national development. Corps members assigned to roles that match with their specialization will yield quality outputs and this will in turn enhance the socio-economic development of the nation. For instance, there are areas in the agro sector that will benefit greatly from the service of agricultural and engineering graduates to deepen food production and related infrastructure development without which Nigeria cannot achieve its desired economic growth (Akande, 2014).

3.0 DESIGN AND OPERATIONS OF WEB-BASED OPTIMIZED SYSTEM

3.1 Analytical structure and operation of the system

User Interface: The implementation of the we be bases system provides for a user interface based on the interactive web browser known

as Internet Explorer, an access is gained by supplying the username and password, both of which aid in the control of access to the website. The selection of each main menu leads to the sub-menus, which calls on the inference procedure associated with that menu. The inference procedure is interactive, and it guides intelligently to supply appropriate information. Finally, the administrator will post the corps members who are registered with different organizations.

Interface forms: There is a home page that enables the corps members and organizations to submit their registration and requests, respectively. This will enable the administrator to process the posting.

Home page: This is the center that provides links to all other pages on the site. It consists of five modules: Home, Register, Login, Check Post, Request, and Admin Area. The page gives a brief introductory message about the Web-based multi-criteria system for NYSC deployment.

3.2 The benefits of the application of web-based system in Human Resource Managements.

Application of Web-based management system offers a range benefits in organizations Human Resource management. These benefits include the following.

Centralized Data Management: Web-based HRM systems provide a centralized repository for all employee-related data, ensuring consistency and reducing data redundancy (Bondarouk & Ruël, 2013).

Improved Accessibility: HR information can be accessed from anywhere with an internet connection, facilitating remote work and enhancing flexibility (Strohmeier, 2007).

Enhanced Analytics: Advanced reporting and analytics tools allow HR professionals to gain insights from workforce data, supporting strategic decision-making (Marler & Boudreau, 2017).

Streamlined Processes: Automation of routine tasks reduces manual work, minimizes errors, and frees up HR staff to focus on more strategic activities (Parry, 2011).

Increased Employee Engagement: Self-service portals allow employees to access and update their own information, leading to greater engagement and satisfaction (Imperatori & De Marco, 2009).

However, the implementation of web-based HRM systems comes with challenges organizations should address such as data security, user adoption, and integration with existing systems (Bondarouk et al., 2017). Additionally, the success of these systems often depends on proper training and change management strategies to ensure that employees at all levels can effectively use the new tools (Marler & Fisher, 2013).

When applied to the NYSC posting process, a web-based system can significantly improve the matching of corps members to their placements. By incorporating data on corps members' academic qualifications, skills, and regional preferences, the system can automate the posting process, ensuring that corps members are placed in sectors where they are most needed. Furthermore, such a system can improve transparency and accountability by allowing both corps members and administrators to track the posting process in real-time.

4.0 CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

Introduction of a web-based system for posting NYSC corps members based on their specialty is important for maximizing the potential of the National Youth Service Corps program. By aligning corps members' educational backgrounds and areas of proficiency with relevant sectors, this system will ensure that their skills are utilized effectively to address specific national needs. This method will not only enhance the productivity and impact of corps members but also contributes significantly to national development by deploying professionals where they are most needed. Furthermore, the web-based system will improve the overall efficiency of the posting process by automating key functions, reducing human error, and ensuring transparency and accountability. The use of technology provides a streamlined, data-driven approach that enhances decision-making, allowing for better monitoring and management of corps member

deployments across various sectors and regions.

By streamlining the posting process and ensuring corps members are matched to roles that suit their qualifications, this system will promote job satisfaction and engagement among participants, leading to better service delivery and the growth of a skilled and motivated workforce. The web-based system ensures greater accessibility, allowing both corps members and administrators to interact with the platform from any location, thus supporting seamless operations and effective communication across the board.

4.2 Recommendations

To ensure the success and sustainability of this web-based system, it is recommended that the NYSC fully integrate the platform into its broader management framework, ensuring that the deployment process is standardized and streamlined across all regions. Regular updates and system maintenance should be carried out to address any technical issues and incorporate new features that reflect the changing needs of both the NYSC and the labor market.

Collaboration among key stakeholders, including employers and industry leaders, is strongly advised, as this will help to ensure that the system is responsive to the specific demands of various sectors.

Finally, scalability should be built into the system to accommodate future growth, such as the inclusion of advanced technologies like artificial intelligence for even more precise role matching, as well as the capacity to handle an increased volume of corps members and participating organizations over time.

REFERENCES

Adeyemi, T. O., & Ekundayo, H. T. (2010). The National Youth Service Corps Programme and Youth Empowerment in Nigeria. *Contemporary Issues in Education Research (CIER)*, 3(4), 77-83.

Adeyemo, D. O. (2015). National youth service corps scheme and national integration in Nigeria. *African Journal of Public Affairs*, 8(3), 101-118.

Ajayi, K. (2017). The Relevance of Corps Members' Specialization in Nation Building: A Case Study of the NYSC Scheme. *Journal of Development and Policy Studies*, 5(1), 45-58.

Akande, J. O. (2014). NYSC and Entrepreneurship Development: Pathway to Reducing Unemployment in Nigeria. *Journal of Management and Business Research*, 9(2), 45-53.

Bondarouk, T., Parry, E., & Furtmueller, E. (2017). Electronic HRM: Four decades of research on adoption and consequences. International Journal of Human Resource Management, 28(1), 98-131.

Holm, A. B. (2012). E-recruitment: Towards an ubiquitous recruitment process and candidate relationship management. German Journal of Human Resource Management, 26(3), 241-259.

Imperatori, B., & De Marco, M. (2009). e-Work transformation. International Journal of Information Systems and Change Management, 3(4), 336-350.

Kavanagh, M. J., Thite, M., & Johnson, R. D. (2015). Human resource information systems: Basics, applications, and future directions (3rd ed.). Sage Publications.

Laudon, K. C., & Laudon, J. P. (2020). Management information systems: Managing the digital firm (16th ed.). Pearson.

Marler, J. H., & Boudreau, J. W. (2017). An evidence-based review of HR Analytics. International Journal of Human Resource Management, 28(1), 3-26.

Nwachukwu, U. O. (2019). Reforming the National Youth Service Corps (NYSC) for Greater Efficiency. *Journal of Nigerian Studies*, 12(1), 33-45.

NYSC. (1973). *The National Youth Service Corps Act*. Retrieved from https://www.nysc.gov.ng/

Obadare, E. (2010). Statism, Youth and Civic Imagination: A Critical Study of the National Youth Service Corps (NYSC) Program in Nigeria. *Journal of Youth Studies*, 13(4), 497-517.

Ogunyemi, O. & Ekanade, O. (2011). Youth and National Development in Nigeria: The National Youth Service Corps (NYSC) in Perspective. *Journal of Humanities and Social Science*, 6(2), 45-52.

Ojo, L. (2020). Community Development Service and Nation Building in Nigeria: The Role of NYSC. *Journal of Humanities and Social Sciences*, 7(3), 52-65.

Oke, L. & Lawal, O. (2013). The Role of NYSC in Promoting National Integration in Nigeria. *African Journal of Social Sciences*, 4(2), 90-101.

Parry, E. (2011). An examination of e-HRM as a means to increase the value of the HR function. International Journal of Human Resource Management, 22(5), 1146-1162.

Strohmeier, S., & Piazza, F. (2015). Artificial intelligence techniques in human resource management—A conceptual exploration. In Intelligent techniques in engineering management (pp. 149-172). Springer.

Zhou, W., & Li, H. (2012). Web-Based Systems: Trends and Challenges. *Journal of Information Systems and Technology Management*, 9(1), 1-13.

THE IMPORTANCE OF LOCAL CONSTRUCTION OF MULTIPLE TEST POINT MODULE FOR ELECTRONIC PRACTICALS

[1]Festus Okosi and [2]Yabefa, Ebimobowei Tonbie
Department of Electrical/Electronics, Bayelsa State Polytechnic, Aleibiri.
eyabefa@gmail.com 07033638790

ABSTRACT
Technical and vocational education is very important for national development. That is why the Nigeria government establish the Technical and Vocational policy on education aimed at promoting technically competent and skilled manpower for both enterprising and self-reliance in Nigeria. Competency and self-reliance are products of active learning, which in the polytechnic setting can only be achieved by practical sessions. The importance attached to practical learning procedures in the polytechnic informed the supervising board for Technical Education, The National Board for Technical Education (NBTE) to allocate fifty percent (50%) of the assessment to practical in the practical related courses taught in the Polytechnics. The availability of power supply unit is very important to all tertiary institutions in Nigeria, mostly to the technologically oriented departments. And the development of a Multiple Test Point/Connection Point Module would significantly improve the use of time, by both the students and the staff in the laboratory. Access to a power supply port by the students would improve competence and expertise, improving self-esteem, self-reliance, and improving the development of middle manpower in Nigeria. The aim of this research project is to design and construct Test and Conduction Point Module. The process and procedures applied in the project include; is design and mapping, drilling of the panel board, installation of socket/jack, soldering and then casing. The local construction of this important laboratory equipment will save Nigeria foreign exchange reserve, that would have been spent in the importation of such equipments a very importance equipment for every electrical and electronics engineering laboratory. The local construction of such vital laboratory equipment will save the country foreign exchange that would have been spent in the importation of such equipment.
Keywords: Design, construction, multiple test points, module.

1.0 INTRODUCTION

The intention of the technical and vocational education policy in Nigeria is to promote and provide technically competent and skilled manpower for both enterprising, and self-reliance, and to be active participants in the world of work (FGN, 2014). But in recent times, engineering and technical education literatures has suggested that the capability of technical related employees does not meet the expectations of industry employers (May & Strong, 2009). Polytechnic education is based more on practical learning, so that the polytechnic graduates can be self-reliant. But should the students lack practical learning due to the unavailability of power supply units that are critical to the practical teaching and learning process, the broad aim of the polytechnic education is be defeated.

Laboratory experiment has been a central component of science instruction since the early 20th century (Singer,et.tal, 2006). It has been used to teach experimental methods and techniques that clarify and or validate existing scientific principles and theories and has typically been considered expository in nature (Lagowski, 2002).

Professional courses such as electronics, are course which gives the student, the theory and practical skill, needed to practice and may account for between 60-70% of contact hours. According to the National Board for Technical Education (NBTE), teaching of the theory and practical work in professional courses should as much as possible be integrated and should be a balance of 50:50 or 60:40 or the reverse (NBTE, 2019).

Studies so far shows that in some prominent institution such as Osmania University, the science faculty conducts practical examination at the end of every semester, while in Nigerian Polytechnic such practical examinations are conducted during continuous assessments. Irrespective of the approach for assessments, it is imperative that each student conduct his/her own practical and that learning should take place.

Power supply unit is a necessary requirement for the functioning of any Electrical/Electronic equipment. The absence of

a power supply unit/sub-section, no matter how sophisticated the equipment or device may be, renders the equipment useless, as no equipment functions without a power supply sub-section.

In the development of practical procedures and steps in the Electric/Electronic laboratory, connecting the equipment to the power supply, and putting the equipment ON, is a step in the procedure that can never be avoided.

The majority of the power supply units in the laboratories of tertiary institutions only have a single output as designed, believing that only one student would be using a power supply unit per time. But from experience, and particularly in our Nigerian institutions, the numbers of students in a practical session are far more than the number of power supply units available in the laboratories. In many cases, students are grouped to smaller units in order to manage the evidently clear disbalance in the ratio of available power supply units to students. The grouping of students in practical sessions make only few students to actually partake in the practical, as most of the students would just be observers, and not actual participants of the particular practical session.

This paper presents the approach of connecting the same magnitude of voltage to several test points in an electronic practical panel.

2.0 MATERIALS AND METHODS

2.1 Area of the study

The area of this study is Yenagoa. Yenagoa is a Local Government Area and the capital city of Bayelsa State in South-South geopolitical zone of Nigeria. The city is located in the southern part of the country at coordinates $4^0 55' 29'' N 6^0 15' 51'' E$. Yenagoa lies on a coastal flood plain with an average height of about 15mters above sea level (Ohwo, 2014). The city is a riverine settlement. It is made up of fusion of several smaller communities that were settled along the Epie Creek, thereby forming a linear settlement. Under the Kopen-Geiger classification of climate, Yenagoa fall into the Monsoon climate (AM). The temperature of the city ranges between 26 and 29^OC throughout the year. The daily temperature of Yenagoa rarely drops to 19^OC or go above 38^OC. The average annual rainfall amount in Yenagoa is about 2870mm (113.3inches) and receives about 285 rainy days on the 1mm (0.04inches) annual threshold. The city enjoys an average of 2994 hours of sunshine annually. The daylight various from 11hours to 12hours 23 minutes daily. (www.wikipedia)

The warmest months in Yenagoa city are February, March and April with daily mean temperature ranging between 28 and 29Oc. The coldest months are July. August and September when the daily average temperature range between 25 and 26Oc throughout the day. On the average, Yenagoa experiences 329 days above 25^Oc temperature and 0^O day below 0C temperature

2.2 Materials

The materials used for the construction of the multiple ports Test/ Connections Points Module are presented in Table 2.1

Table 2.1: Equipment and accessories used for the construction

S/N	Equipments and Accessories
1.	Generic Complete Mechanical Tool Box set
2.	(1/2'' and ¼'') socket sets
3.	Heavy Duty Bench Vice
4.	Metal Workbench
5.	Wired Drilling Machine
6.	Bosch Professional Cordless Drilling Machine
7.	Professional Drill Bits set
8.	DeWalt Multi-Headed Drill Driver
9.	Center Punch
10.	Prick Punch
11.	Reamer set
12.	Divider
13.	Third hand with magnifying glass and light
14.	Adjustable PCB Holder

15.	Flexible Arm Magnetic PCB Holder
16.	Professional Soldering Station
17.	Bench Power Supply
18.	1300W Hot Air Rework Station
19.	Banana Connectors :
20.	4mm Female Connectors (50 pcs)
21.	4mm Male Connectors (50 pcs)
22.	2mm Female Connectors (50 pcs)
23.	2mm Male Connectors (50 pcs)
24.	4mm red banana connection probe (50 pcs)
25.	4mm black banana connection probe (50 pcs)
26.	2mm red banana connection probe (50 pcs)
27.	2mm black banana connection probe(50 pcs)
28.	Soldering Lead

The adopted procedures for the sequential construction activities are as follows

(a) Design and mapping
(b) Drilling of the Panel Board
(c) Installation of Female Connectors (Sockets/ Jack)
(d) Soldering
(e) Casing

Body Coupling Unit

First the coupling unit include a body having a rectangular stand and guiding the experimental module unit (Figure2.2) inserted therein; and a coupling groove formed on an inner surface of the body. The experimental module coupling units include a guide disposed on the plate and inserted into the body of the trainer coupling unit; a removable member disposed in the guide that can be inserted into the body of the trainer coupling unit. The body of the trainer include tiling portion members for each module member that will be attached to the trainer panel and this include a receiving groove formed in the trainer panel; and a coupling member disposed to guide and couple the module into the coupling groove of the trainer unit.

System Assembling

The main system fabrication and assembling is an aluminium pipes works hence, the fabrication method used is bench work, nuts and bolts.

As shown in Figure2.1, the module consists of several test points where different experimental modules are connected, to serve as power supply subunits to the independent practical modules.

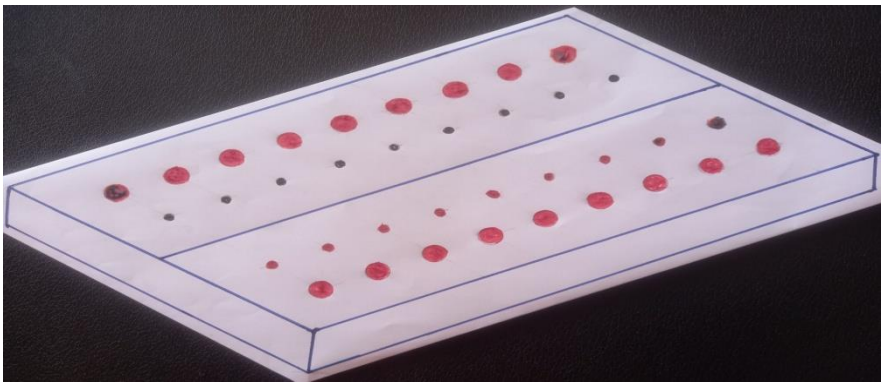


Figure 2.1: Test Point Module

Experimental modules

As shown on the experimental module, each of the sub-circuit needs a power supply test point in order for the circuit to work properly. The experimental test/connection board is wired on a plain plastic board on the back side while the front side carrying the female connection points.

Each of the subsystems as shown on the bigger practical electronic panel in Figure 2.2 is connected to ports of the test point's module for effective performance.

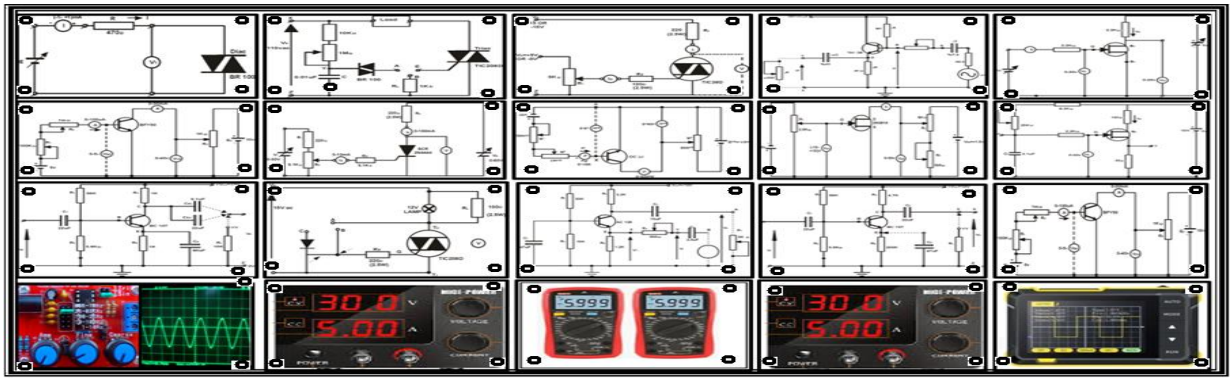


Figure 2.2: Experimental Electronic Practical Panel

3.0 RESULTS AND DISCUSSIONS

3.1 Results

The constructed multiple points test module is being validated. This is a normal engineering practice. The performance evaluation is aimed at determining the functionality and performance of the module on application of different output equipment on the module. During the validation process, various devices were used as output load to access the functionality and performance of the module. The Output loads applied and their input voltage as well as output voltage ranges are presented in Table 3.1

Table 3.1: Output validation loads

EQUIPMENT	INPUT VOLTAGE (V)	RANGE OF OUTPUT VOLTAGE (V)	
		Minimum	Maximum
Non Inverting Amplifier Circuit	5	0.48	3.1
Inverting Amplifier Circuit	5	0.5	3.3
555 Timer Circuit	9	0.01	3.4
Logic Level Indicator Circuit	5	0	1
Linear Voltage Regulator Circuit	15	5	9
Kirchhoff Voltage Law Verification Circuit	10	2.44	7.55
Voltage Amplifier Circuit	12	0.04	

Table 3.2: Equipment operational criteria and validation rating

VALIDATION CRITERIA	VALIDATIONS				VALIDATION CATEGORY	VALIDATION RATING (%)
	V1	V2	V3	Average	valid	
Functionality	**4.6**	**4**	**4.7**	**4.4**	**valid**	**87**
Performance	**4.6**	**4.7**	**4.7**	**4.7**	**valid**	**93**
Reliability	**4.2**	**4.1**	**4.3**	**4.2**	**valid**	**83**
Output integrity	**4.5**	**4.8**	**4.5**	**4.6**	**valid**	**91**

3.2 Discussions

The importance of laboratory equipment in the tertiary institutions cannot be over emphasized. It plays an important role in enhancing outcome of student training in the tertiary institutions. The development of the multiple test point module greatly enhanced the students' participation in the practical sessions. The production of this equipment has afforded the students the opportunity to directly be in touch with operational mechanism of this equipment, thereby

enhancing their practical skills. The availability of the equipment is improving the students understanding and application of theories learnt in the class.

The following equipment were plug at different connection points to test and validate the functionality and performance of the multiple test points module constructed. These include; Non-Inverting Amplifier Circuit, Inverting Amplifier Circuit, 555 Timer Circuit, Logic Level Indicator Circuit, Linear Voltage Regulator Circuit, Kirchhoff Voltage Law Verification Circuit and Voltage Amplifier Circuit.

Equipment validation helps to mitigate risks, prevent equipment failures, reduce downtime, enhance product quality and also ensures the overall operational excellence of a new construction. The multiple test point module constructed was validated to verify the functionality and performance of the equipment. Four equipment operational criteria were validated. These include functionality, performance, reliability and output integrity.

For each of the four operational criteria, readings were taken three times and the average computed and then the validations result rated in percentage. The functionality validation has an average of 4.4 on 0, and this is rated 87% effective. The performance validation has an average of 4.7, and this is rated 93% effective. The reliability validation has an average of 4.2, and this is rated 83% effective. The output integrity validation has an average of 4.6, and this is rated 91% effective. On the overall, the equipment has effectiveness rating of 88.5%. Integrating verification and validation process into overall infrastructure design and construction activities is imperative to achieve the maximum benefit (Simon, 2017). This further stresses the importance of validation in every new engineering construction. Validation of results is also an important phase in the organization of a researcher's project (Liu, 2013)

REFERENCE

Egbo Walamam Mansi and Eremasi Yaguo Benjamin Ikele (2024). Water Star Grass Enhanced Bioremediation of Petroleum Hydrocarbon Polluted Soil. *International Journal of Geography & Environmental Management* (IJGEM) Vol. 10 No. (6):164 - 174

FGN (2014) National Policy on Education

Lattuca, L.R. and Newstetter, W.C (2011) Engineering Education and the Development of Expertise. Journal of Engineering Education, January, 2011

Liu Jiali (2013). Validation methodologies for construction Engineering and Management Research. Collections of theses by University of waterloo. www.uwaspace. uwater.ca

May, E & strong, D.S (2009) Is Engineering Education Delivering What Industry Requires? Journal of Engineering Education

Martin, R., Maytham, B., Case, J., and Fraser D (2005) Engineering Graduates' Perceptions of how well they were prepared for work in Industry. European Journal of Engineering Education. Vol.30, No.2, May 2005, pp.167-180

Ofoego C.O (2017) Philosophy of Education: Focusing Higher Institutions, Owerri, Wilderness Voice Press.

Prince, M (2005) Does Active Learning Work? A Review of the Research. Journal of Engineering Education. July, 2004. Pp 1-9

Simon Hughes (2017). Improving Quality Management Using Verification and Validation on Construction Projects. Retrieved on 19th October, 2024, from construction executive at www.constructionexecutive.com